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THE "BLOOD BANK": THE FIRST FOUR YEARS' PRACTICAL EXPERIENCE.

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THE value of indirect methods of blood transfusion, in which sodium citrate solution is used as an anticoagulant, has long been recognized. However, despite the work of Rous and Turner⁽¹⁾ in 1916 on the preservation of blood, and of Robertson⁽²⁾ in 1918 showing the convenience of stored blood, it was not until 1936-1937 that reports of the establishment of blood banks were received.

At this time Yudin⁽³⁾ described the use of human cadaver blood in a series of 924 cases, and although there were many obvious objections to the procedure, this report stimulated various further studies on methods for the collection, preservation and storage of blood. Two of the earliest and the most fruitful of such studies are those of the Spanish Government Blood Transfusion Service, described by Duran-Jorda,⁽⁴⁾ and of Fantus,⁽⁵⁾ who reported the establishment of a "blood bank" at the Cook County Hospital. Other and more recent reports on the use and value of stored blood came from numerous workers, including Ravitch,⁽⁶⁾ Elliott, MacFarlane and Vaughan,⁽⁷⁾ Edwards and Davie,⁽⁸⁾ Stewart,⁽⁹⁾ Hamilton-Paterson,⁽¹⁰⁾ and Biddle and Langley.⁽¹¹⁾

The organization of a "blood bank" was first undertaken in Australia at Melbourne in the latter half of the year 1938, and in January, 1939, stored blood ten days old was administered. In this paper the experiences of this "blood bank" over the first four years of its existence are recorded.

ORGANIZATION.

Blood has been collected, as described by Wood,⁽¹²⁾ from voluntary donors of the Red Cross Blood Transfusion

Service (Victorian Division). Appointments for blood donors were made by letter seven to fourteen days ahead, or later by telephone to replace cancellations or to make up any unexpected increase in the number required. Donors were instructed not to eat any fatty foods at the meal preceding the giving of blood, and suitable foods were suggested. It was also found necessary to emphasize that donors must not forgo this meal, even if butterless bread and milkless tea seemed uninviting, as in the early days some donors did this and felt faint from lack of food even before blood was taken.

During the period from January 10, 1939, to January 13, 1943, blood for the "bank" was collected from 2,546 donors. Group A and group O donors were mainly used, but it was sometimes requested that group B blood be stored. The distribution of these three groups amongst the donors was as follows:

Group A	925 donors (36.3%)
Group B	15 donors (0.6%)
Group O	1,606 donors (63.1%)

The average number of donors who gave blood in the twelve months ending January, 1940, was four per week, in the year ending January, 1941, it was eight per week, and in the two succeeding years the figures were nine and 28 donors per week respectively. (It is to be noted that, since the period under review, these numbers have been greatly exceeded; the average number of donors per week during the first six months in 1944 was 55.) The largest volume of blood collected from any donor was 600 cubic centimetres. Over the series, the average volume of blood collected per donor was 500 cubic centimetres. These figures do not include the volume of the anticoagulant solution used.

The blood collected from 504 donors (19.8% of the total number bled) was discarded for one or other of the following reasons. In five cases the blood had solidly clotted, owing to insufficient admixture with the anticoagulant solution during collection. Sixteen bottles were discarded owing to the fatty appearance of the plasma on removal from the refrigerator. The appearance of these small amounts of fat in the plasma sometimes resembled the

¹This work was carried out with the aid of a grant from the National Health and Medical Research Council.

turbidity due to bacterial contamination, so that ten of these bottles were culturally examined, all with negative results. In the other cases the donors had apparently partaken of a hearty meal, as a definite "cream" on the plasma up to 0.25 inch thick was observed. Twenty bottles formed part of the material used in an investigation of the contamination of stored blood under the conditions at this "bank", which will be discussed in another paper. In fourteen instances, blood which had been taken from the "bank" and returned two or three days later, unused, and without information concerning its treatment in the interim, was discarded. In 101 cases in which only 300 cubic centimetres of blood or less had been obtained, the bottles were not used. At first the 300 cubic centimetre lots were kept for the Children's Hospital, which sometimes asked for small volumes. It was found, however, that these occasions were rare, and seldom coincided with those when the small volumes were available, as only ten bottles of blood with a volume of 300 cubic centimetres were used over a period of four years. Thirty bottles were discarded owing to leakage of the blood out of the bottle. This difficulty will be discussed more fully below. When the blood had been stored for twenty-one days it was discarded, and 318 bottles were wasted in this way. Of these, 142 contained group A blood, 13 group B blood and 163 group O blood. The reasons for the discarding of these bottles and the numbers and the percentages of donors of different groups called beyond the actual need are shown in Tables IA and IB. From these figures it is seen that it was not found practical or economical for a general civilian "blood bank" to cater specially for small volumes of blood or to hold stocks of group B blood.

TABLE IA.

Donors from whom Blood was Collected, from January 10, 1939, to January 13, 1943.

Number of Donors.	Blood Group.		
	A.	B.	O.
2,546	925	15	1,606

TABLE IB.

Blood Discarded.	Percentage of Total.	Blood Group.		
		A.	B.	O.
Bottles discarded, volume collected being 300 cubic centimetres or less ..	101	4.0	—	—
Bottles discarded unused after 21 days' storage ..	318	12.5	142	13
Percentage of bottles of blood of different groups collected and discarded after 21 days' storage ..	—	15.4	86.7	10.1
Bottles discarded for other reasons ..	85	—	—	—
Total number of bottles of blood discarded from January 10, 1939, to January 13, 1943 ..	504	19.8	—	—

Refrigeration.

The blood was stored in an electric refrigerator designed to hold forty-eight bottles with a temperature range of 2° to 4° C. Exterior lights gave warning if the temperature range rose or fell beyond these limits. When the capacity of this refrigerator was exceeded, the blood was stored in ice boxes. The maximum and minimum temperatures attained in these boxes if they remained unopened for twenty-four hours were 5.0° C. and 3.3° C. respectively, while the maximum temperature in such a box opened several times during a working day was 7.8° C.

Distribution.

For the first three years all blood was kept in the electric refrigerator described above, which is situated at the Walter and Eliza Hall Institute, Royal Melbourne Hospital. From this refrigerator, blood was sent on request together with a "giving set" to any other hospital or medical practitioner. During the day these calls are attended to by the staff of the "bank", but at night this service is carried out by the senior sister on duty. Every evening the sister is supplied with a list of the blood available (the oldest blood being at the top of the list), with an understanding that the blood at the top of the list will be used first unless blood of a certain age is specifically asked for.

In January, 1942, as part of the emergency transfusion scheme adopted in this State, two ice boxes were distributed to each public hospital. One of these ice boxes was stocked with serum and the second was originally intended for the reception and storage of blood needed for war emergencies, such as air raids. It was later suggested, however, that as some time was inevitably involved in the transport of blood from the Royal Melbourne Hospital to other hospitals (a problem which was accentuated at night time), and that as the demands for blood from other hospitals were increasing, the second ice box at each hospital could be used for storage of blood to meet normal needs. These "subsidiary blood banks" have been established at the Queen Victoria Hospital, the Women's Hospital, St. Vincent's Hospital and the Children's Hospital; their supplies have been maintained by the central "bank" at the Royal Melbourne Hospital, which also caters for the needs of this hospital itself, and of other smaller or special hospitals and private practitioners. The Alfred Hospital and Prince Henry's Hospital are supplied by a "bank" organized by the Alfred Hospital in cooperation with the Red Cross Blood Transfusion Service. The blood is inspected twice a week; old blood is withdrawn on these days and replaced in the "subsidiary banks" by fresh blood. The names of the donors whose blood is stored are recorded in a book, and any resident medical officer using the blood enters the patient's name, the ward and the date on which the blood is used. Sterile "giving sets" are left in closed boxes adjacent to the ice boxes. It was found that the establishment of "subsidiary banks" increased the use of stored blood, 1,460 donors being called from February 4, 1942, to January 11, 1943. Associated with the increased distribution, there was an increase in the number of bottles of blood discarded as being "too old". During the first three years, when all blood was distributed from the "central bank", 7.1% of the total collected had been discarded for this reason; but the percentage rose to 29.2 in the following first twelve months, during which each hospital was given its own supplies. This disadvantage of "subsidiary banks" may have to be weighed against their manifest advantages, by those considering any future extension of "blood banks". This figure was reduced to 11% for the first six months in 1944. The main factor contributing to this improvement appears to be the increased use of blood at every "bank".

Apparatus.

The apparatus used in this work was the standard "Solvuvac" blood transfusion set. Certain modifications were made in the giving set; the metal filter bag holder and connector were discarded and similar glass fittings substituted; double muslin filter bags were made, and as the metal spring became unsatisfactory after being autoclaved several times, the corks were tied in with string. The Murphy drip tube was replaced by the type described by Milroy and Matheson,⁽¹³⁾ and Keynes's needles were used. As the metal bands used for supporting the bottles when inverted for administration wore out, they were replaced by netted or crocheted string bags. All apparatus was sterilized by being autoclaved for twenty minutes at fifteen pounds' pressure in vertical gas-heated autoclaves, the assembled fittings being wrapped in grease-proof paper. After being autoclaved, fittings were dried off in a warm oven.

It was sometimes found that while the blood was being collected, a slight positive pressure developed in the bottle which caused the blood to run up the air tube. If in these

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bottles the glass flange of the air tube which rests on the stopper was uneven, so that the rubber washer would not fit flat, or if the metal collar and screw cap were at all loose, it was found that the blood leaked right up the air tube and out of the bottle.

Cleaning of Apparatus.

Instructions were given that all apparatus was to be returned unwashed. This was a very agreeable arrangement to those using the blood; it also suited the "bank", as it was found that various items became mislaid if the equipment was dismantled elsewhere. On return, all glass fittings were disconnected from rubber tubing and stoppers; the glassware was washed in soapy water, rinsed, dried, and immersed in concentrated sulphuric acid (commercial) for twelve to twenty-four hours. It was then washed with tap water till free from acid (as judged by testing the rinsing water with litmus paper), then rinsed four times with pyrogen-free freshly distilled water and dried in the oven. Rubber tubing was brushed through after each use with a percolator brush dipped in soapy water, then rinsed with tap water and finally distilled water. The tubing was then hung on a rack in a warm room to dry. Rubber stoppers were similarly treated. New rubber tubing and stoppers were autoclaved for twenty minutes at fifteen pounds' pressure in 5% sodium carbonate solution, then rinsed till free from alkali and finally rinsed with distilled water. Care was taken that all apparatus was dried immediately after being rinsed and autoclaved on the day on which it was assembled.

Although the above method of cleaning was used in the series quoted in this paper, sulphuric acid has since been replaced as a cleaning agent by the alkaline product known as "Clensel". All glassware, including bottles, is steamed for twenty minutes in a steam sterilizer, in a solution made by dissolving thirty cubic centimetres of "Clensel"¹ (commercial) in 1,000 cubic centimetres of tap water. The "Clensel" solution is used three times and then discarded. The glassware is rinsed with tap water till free from the solution (rinsings tested with litmus paper), then with four changes of distilled water, and dried.

This method appears to be as effective as the sulphuric acid technique, as there has been no increase in the incidence of reactions attributable to pyrogens. It also excludes any risk of burns to personnel and their clothing as the result of accidents. A quicker turnover of apparatus is also achieved by this method.

Preservative Solutions.

Experimental work with various preservative solutions has been described by numerous workers, including Dubash, Clegg and Vaughan,⁽⁴⁾ Maizels and Whittaker,⁽⁵⁾ De Gown and Hardin,⁽⁶⁾ and Harrington and Miles.⁽⁷⁾ Several solutions have been tried by us during the period under review (see Table II), and finally the solution recommended by Duran-Jorda⁽⁸⁾ was adopted in a modified form. This solution was chosen as a result of the observation by Splatt⁽⁹⁾ that the changes in the mineral content during storage in it were less than those which occurred during storage in the other solutions tried. There were also minimum dilution of the collected blood, and less hæmolysis of the erythrocytes after storage for twenty-one days. The modifications of the Duran-Jorda solution referred to above were made to assist in the collection of blood. Thus it was found more convenient to combine the Duran-Jorda solutions (a) and (b), and to add to the flask 60 cubic centimetres of a 4% sodium citrate and 2% glucose solution. Later, the solution was put up in 100 cubic centimetre ampoules by the manufacturers of the "Soluvac" flask, and for economy and convenience the volume used (for 570 cubic centimetres of blood) was reduced to 50 cubic centimetres. This reduction in amount of the anticoagulant from 60 to 50 cubic centimetres caused no increase in the number of small clots and debris found in the stored blood, in visible hæmolysis, or in difficulty in the administration of the blood.

¹ "Paterson's Concentrated Commercial Clensel" is obtainable from Clensel Products, Proprietary, Limited, 360, Collins Street, Melbourne.

TABLE II.
*Solutions Used for Storage of Blood.*¹

Preservative Solution.	Volume of Solution. (Cubic Centimetres.)	Volume of Blood Added. (Cubic Centimetres.)	Number of Donors from whom Blood was Collected.
1. Harrington and Miles 1.05% sodium citrate. 0.9% sodium chloride.	600	600	41
2. Maizels and Whittaker 1.05% sodium citrate. 0.43% sodium chloride.	300	600	13
3. L.H.T. 0.8% sodium chloride. 0.5% sodium citrate. 0.02% potassium chloride. 0.04% magnesium sulphate.	600	600	23
4. Duran-Jorda: (a) 4.0% sodium citrate .. (b) 4.0% sodium citrate .. 2.0% glucose.	30 } 30 }	600	92
5. Modification of solution 4 4.0% sodium citrate .. 2.0% glucose.	60 50	600 570	34 2,343

¹ The pH of all solutions was 7.3.

Records and Reports.

Central records were kept of all donors called, the volume of blood donated, the preservative solution use, the dates of collection and of administration of the blood, the name of the medical officer requesting blood from the "bank", the name of the patient, the ward and the hospital where the blood was used. Day books in which a record of any blood given out, showing the donor's name, the blood group, and the destination of the blood, were kept by the staff of the "central bank" (at night by the sister on duty at the Royal Melbourne Hospital). Similar books were kept at the subsidiary depots. Records are missing concerning only 145 donors in this series. This low figure (5.7% of all bottles given out) gives an indication of the valued cooperation which we have had from all connected with the "blood bank".

A report on the result of the transfusion was requested from all persons using blood. These reports were entered on the forms drawn up and used by the Red Cross Blood Transfusion Service (Victorian Division) and the information given is shown below:

Hospital Report.

(Confidential Report for Medical Purposes only.)

Patient's name.....
 Address.....
 Sex..... Blood group.....
 Nature of disease or injury.....
 Name of donor.....
 Sex..... Blood group.....
 Quantity of blood taken..... Stored or fresh blood.....
 Result of transfusion.....
 Reaction:
 Temperature.....
 Pulse.....
 Rigors.....
 Collapse.....
 Date of transfusion.....
 Medical officer.....
 Date.....

If the report was not returned in fourteen days the medical officer was approached. It was found that in this series the number of reports not returned was 28.7% over the whole period; but the percentage of outstanding reports increased from year to year as the work of the "bank" expanded (see Table III). The establishment of subsidiary "banks" in January, 1942, and the numerous changes in resident medical staff had some effect on this increase; but the major influence is probably the fact that transfusion with stored blood has come to be regarded as a commonplace procedure not requiring special records. The impression has been received that there was never

delay in reporting any reaction which might be attributable to the administration of stored blood. It is, however, urged that in order that the statistics may be accurate, reports should be furnished concerning all blood used.

TABLE III.
Number of Reports not Returned.

Period.	Number of Bottles Used.	Reports Not Received.	Percentage.
10/1/39 to 10/1/40 ..	194	16	8.3
10/1/40 to 10/1/41 ..	363	44	12.1
10/1/41 to 10/1/42 ..	451	104	23.1
10/1/42 to 10/1/43 ..	1,034	422	40.8
Total period 10/1/39 to 10/1/43 ..	2,042	586	28.7

An analysis of the reports gives the following data. One thousand and forty-five reports state that the result of transfusion was marked improvement, improvement, or definite improvement in the patient's condition, or that the results were excellent, very good, good, very satisfactory, satisfactory or successful, or that recovery of the patient resulted; 96 reports state there was temporary benefit or slight improvement in the patient's condition; thirty reports record temporary benefit, with death occurring later as a result of the injury or disease; sixty-six reports state that there was no change in the patient's condition; twenty reports show that the patients died during the transfusion or within the next twenty-four hours, as a result of their condition. In fourteen cases, death resulting from the original condition occurred at an unspecified interval after the transfusion.

The reports show that blood was given to 1,032 patients. The conditions from which they were suffering can be classified into the following main groups: primary blood dyscrasias, secondary anaemia, shock, acute blood loss, post-operative need, poisoning. In fifty-one cases there is no record of the nature of the injury or disease. The specific diseases as entered on the report forms and the number of patients in each group are as follows.

Blood Dyscrasias.—There were 43 patients with blood dyscrasias, as follows: leucæmia, 1; aleuchemic leucæmia, 1; hypochromic anaemia, 3; hypoplastic anaemia, 1; aplastic anaemia, 10; thrombocytopenic anaemia, 2; idiopathic hypochromic anaemia, 1; anaemia, 4; Banti's syndrome, 2; granulopenia, 1; hæmophilia, 8; Hodgkin's disease, 4; pernicious anaemia, 5.

Secondary Anaemia.—There were 340 cases of secondary anaemia; of these 182 were due to chronic blood loss with or without operation, as follows: ulcerative colitis, 8; uterine hæmorrhage, 34; chronic hæmorrhaging peptic ulcer, 40; incomplete abortion, 62; carcinoma of the caecum, 4; carcinoma of the colon, 3; carcinoma of the rectum, 4; carcinoma of the cervix, 10; carcinoma of the uterus, 5; carcinoma of the oesophagus, 1; carcinoma of the stomach, 11. There were 109 cases of secondary anaemia due to infection or toxæmia, distributed as follows: acute pancreatitis, 1; chronic cholecystitis, 4; carbuncle of the kidney, 1; choleperitoneum, 1; pyonephrosis, 2; empyema, 7; gas gangrene, 1; general peritonitis, 9; pelvic abscess, 2; inguinal abscess, 2; subphrenic abscess, 2; lung abscess, 4; sapræmia, 1; proctitis, 1; osteomyelitis, 3; cellulitis, 1; post-mastoid meningitis, 3; puerperal sepsis, 16; myelitis, 3; septicæmia, 11; *Bacillus welchii* septicæmia, 9; streptococcal septicæmia, 13; pneumonia, 1; infected hand, 1; obstructive jaundice, 1; pulmonary tuberculosis, 4; tuberculosis of the spine, 2; tuberculosis of the kidney, 1; toxic anaemia, 1; toxæmia of pregnancy, 1. There were 49 cases of secondary anaemia of which the cause was not stated.

Acute Blood Loss.—There were 455 cases of acute blood loss, as follows: accidental hæmorrhage, 35; ectopic pregnancy, 29; miscarriage, 3; epistaxis, 5; hæmatemesis, 140; hæmothorax, 3; hæmangioma, 1; hæmoperitoneum, 3; lacerations, 2; *placenta prævia*, 26; post-partum hæmorrhage, 70; rupture of the ileum, 1; rupture of the kidney, 2; rupture

of the liver, 4; rupture of the spleen, 10; rupture of the uterus, 5; ruptured viscus, 5; amputated limbs, 18; post-operative hæmorrhage, 74; secondary hæmorrhage, 19.

Shock.—There were 100 cases of shock, as follows: burns, 1; obstetric shock, 19; fractured limbs, 19; fractured skull, 5; gunshot wounds, 6; post-operative shock, 50.

Post-Operative Therapy.—Transfusion was required after the following 41 operations: for cerebral tumour, 8; gastrectomy, 9; for intestinal obstruction, 3; splenectomy, 1; for hypernephrotic kidney, 5; for retroperitoneal sarcoma, 2; for carcinoma of the gall-bladder, 1; thyroidectomy, 2; for ovarian cyst, 1; for hydatids, 2; for gangrenous appendix, 1; for stone in the common bile duct, 2; for thrombosis, 1; for circulatory failure, 1; prostatectomy, 2.

A blood transfusion was given in two cases of carbon monoxide poisoning.

Period of Storage of Blood.

In the great majority of cases, the blood collected was stored for periods ranging from one hour to twenty-one days. In some instances this period was exceeded, the maximum age of the blood used being thirty days. It was found that of 1,897 transfusions concerning which records are available, 1,139 (60.0%) were administered within the first seven days after collection of the blood, 440 (23.2%) from the eighth to the fourteenth day, 237 (12.5%) from the fifteenth to the twenty-first day, 76 (4.1%) from the twenty-second to the twenty-eighth day, and one each on the twenty-ninth and the thirtieth days. The days on which three transfusions were given are unknown (Table IV).

Reactions Regarded as Attributable to the Transfusion.

Reactions attributable to the transfusion are reported in 40 cases. The data for the analysis of reactions following the administration of stored blood have been obtained from the reports returned by medical officers and when available from the medical histories of the patients to whom stored blood was given. Reports were received of the results of the administration of 1,311 bottles of blood to 1,032 patients. Table IV gives the details of the incidence of various types of transfusion reactions in relation to the number of days of storage. If two or more bottles of blood were given of different "age", the entry in Table IV is shown under the day giving the longest storage time. In this series, 40 reactions are reported to have occurred following the administration of 47 bottles of blood. This includes 30 febrile reactions, seven cases of jaundice, two other reactions classified as hæmolytic, and one case of urticaria (Table V). Riddell¹⁰⁰ supports the view of Kordenat and Smithies¹⁰¹ that nearly all transfusions are associated with some rise in temperature (even though this may be symptomless), and classifies febrile reactions as follows: grade I, in which there is a rise of temperature to 100° F., but no other objective features are observed; grade II, in which there is a similar or greater rise associated with a feeling of cold, but no actual rigor; grade III, in which a rigor occurs.

TABLE V.
Number and Type of Reactions Reported from the Administration of 1,311 Bottles of Blood.

Type of Reaction.	Number of Bottles.	Percentage of 1,311.
Febrile reactions	32	2.4
Grades I and II	24	1.8
Grade III	8	0.6
Hæmolytic reactions	2	0.2
Jaundice	12	0.9
Allergic reactions	1	0.1
Total	47	3.6

On this basis it was found that the 30 febrile reactions in our series included 23 grade I and grade II reactions following the administration of 24 bottles of blood (1.8%);

TABLE IV.
Correlation of Number and Type of Reactions with Age of Blood.

Length of Storage Time in Days.	Number of Bottles Given.	Number of Bottles Given but no Reports Received.	Number of Bottles Given and Reports Received.	Number of Febrile Reactions.			Number of Hemolytic Reactions.	Jaundice.	Number of Allergic Reactions.
				Grade I.	Grade II.	Grade III.			
0	122	26	96	1	1	NIL	NIL	NIL	NIL
1	214	37	177	2	3	1	NIL	NIL	1
2	177	53	124	NIL	4	NIL	NIL	NIL	NIL
					(1 reaction, 2 bottles)				
3	158	42	116	3	1	1	NIL	1	NIL
								(2 bottles)	
4	119	45	74	1	2	NIL	NIL	NIL	NIL
5	127	32	95	NIL	2 ¹	NIL	NIL	1 ¹	NIL
6	122	36	86	NIL	NIL	NIL	NIL	1	NIL
7	100	43	57	NIL	NIL	2	NIL	NIL	NIL
8	83	36	47	NIL	NIL	NIL	NIL	NIL	NIL
9	61	17	44	1	1	NIL	NIL	NIL	NIL
10	86	22	64	NIL	1	2	NIL	NIL	NIL
11	69	15	54	NIL	NIL	1	NIL	NIL	NIL
12	57	13	44	NIL	NIL	NIL	NIL	NIL	NIL
13	43	14	29	NIL	NIL	NIL	NIL	NIL	NIL
14	41	9	32	NIL	NIL	1	NIL	1	NIL
					(2 bottles)				
15	49	13	36	NIL	NIL	NIL	NIL	NIL	NIL
16	33	21	12	NIL	NIL	NIL	NIL	NIL	NIL
17	42	22	20	NIL	NIL	NIL	NIL	NIL	NIL
18	29	13	16	NIL	NIL	—	1 ¹	NIL	NIL
19	31	18	13	NIL	NIL	NIL	NIL	NIL	NIL
20	21	9	12	NIL	NIL	NIL	NIL	NIL	NIL
21	32	10	22	NIL	NIL	NIL	NIL	NIL	NIL
22	23	13	10	NIL	NIL	NIL	NIL	NIL	NIL
23	27	11	16	NIL	NIL	NIL	NIL	2	NIL
								(each reaction 2 bottles)	
24	9	8	1	NIL	NIL	NIL	NIL	1	NIL
								(3 bottles)	
25	5	3	2	NIL	NIL	NIL	NIL	NIL	NIL
26	3	1	2	NIL	NIL	NIL	NIL	NIL	NIL
27	4	2	2	NIL	NIL	NIL	NIL	NIL	NIL
28	5	2	3	NIL	NIL	NIL	NIL	NIL	NIL
29	1	—	1	NIL	NIL	NIL	NIL	NIL	NIL
30	1	—	1	NIL	NIL	NIL	NIL	NIL	NIL
No time given	3	—	3	NIL	NIL	NIL	NIL	NIL	NIL
	1,897	586	1,311	8	15	7	2	7	1

¹ These two types of reaction were observed in one patient suffering from a carcinoma of the cervix following the administration of one pint of blood.

seven grade III reactions were recorded after eight (0.6%) bottles of blood were given. The grade III reaction recorded after the administration of two pints of blood (both belonging to group A, one eleven days old and the other fourteen days old), occurred in a case of streptococcal septicaemia following a septic incomplete abortion.

This patient (who belonged to blood group A) had already received four pints of stored blood in the previous three days. The first of the two pints of stored blood, eleven days old, was given uneventfully and was followed immediately by the pint of blood fourteen days old. About half an hour after the transfusion of the latter blood was started, the patient's condition showed some deterioration and a rigor was recorded. The transfusion was stopped, but was restarted two and a half hours later with the same blood, and no further untoward reaction was recorded. The following day a further pint of blood, fourteen days old, was given; the general condition of the patient was unchanged, there was no rigor, but fairly severe jaundice was observed the same day. No blood pigments were observed in the urine. The following day the jaundice was deeper and a further transfusion of fresh blood was given. The jaundice did not decrease till four days later. This patient received ten pints of stored blood and three pints of fresh blood over a period of thirty days, and died nine days after the last transfusion. The diagnosis from the post-mortem examination was post-abortional pelvic abscess, general septicaemia, pyelonephritis.

The other grade III reactions were seen in one case of Hodgkin's disease in which blood seven days old was given, a case of chronic cholecystitis (blood one day old), one case of septicaemia following manual removal of the placenta (blood three days old), one case of adenoma of the uterus (blood ten days old), one incomplete abortion (blood seven days old) and one case in which blood ten days old was given one day after second-stage prostatectomy had been performed.

By means of this classification, it is possible to compare the reactions obtained in this series with those recorded by other workers. Edwards and Davie⁶⁰ recommend that this comparison be limited to grade III reactions, as the criteria for the minor reactions included in grades I and II vary considerably, while those for grade III reactions are more or less constant. It was found (Table VI) that the incidence (0.6%) of severe febrile reactions in this series compares favourably with that reported by other workers.

TABLE VI.
Incidence of Febrile Reactions.

Series.	Number of Transfusions.	Grade III Febrile Reactions.
Londy, Tuohy and Adams, 1937	149	4.2%
Biddle and Langley, 1939	150	5.0%
Cameron and Ferguson, 1939	1,000	2.8%
Elliott, MacFarlane and Vaughan, 1939 ..	50	8.0%
Hamilton-Paterson, 1939	46	6.0%
Brewer, Malzel, Oliver and Vaughan, 1940	56	5.4%
De Gown and Hardin, 1940	1,458	3.9%
Edwards and Davie, 1940	1,364	5.0%
Stewart, 1940	427	6.1%
Jewsbury, 1941	389	4.1%
Present series, 1944	1,131	0.6%

When the reactions were correlated with the different conditions for which transfusions were administered (Table VII), it was found that the total incidence of febrile reactions, minor and severe combined (minor 11.6%, severe 2.3%), was highest in patients suffering from various types of blood dyscrasias. This incidence is much higher than that observed in any other groups, the next (for combined minor and severe reactions) being 4.8% found in cases in which blood was given as post-operative

TABLE VII.
Correlation of Reactions with Condition of Patient.

Condition.	Number of Cases.	Febrile Reactions.					Hæmolytic Reactions.		Urticaria.		Jaundice.		Total Percentage.
		Grades I and II.		Grade III.		Total Percentage.	Number.	Per-centage.	Number of In-stances.	Per-centage.	Number of In-stances.	Per-centage.	
		Number.	Per-centage.	Number.	Per-centage.								
Blood dyscrasias	43	5	11.6	1	2.3	13.9	Nil.		Nil.		Nil.		13.9
Secondary anaemia—													
(a) Chronic blood loss with or without operation ..	182	5	2.8	2	1.1	3.9	1	0.6	Nil.		2	1.1	5.6
(b) Toxaemia or infection ..	109	2	0.9	3	2.8	3.7	1	0.9	Nil.		2	1.8	6.4
(c) Cause not stated ..	45	1	2.0	—	—	2.0	Nil.		Nil.		Nil.		2.0
Acute blood loss ..	455	7	1.5	Nil.		1.5	Nil.		0.2		2	0.4	2.1
Post-operative treatment ..	41	1	2.4	1	2.4	4.8	Nil.		Nil.		Nil.		4.8
Shock ..	100	2	2.0	Nil.	—	2.0	Nil.		Nil.		1	1.0	3.0
Carbon monoxide poisoning ..	2	Nil.		Nil.			Nil.		Nil.		Nil.		
Disease not known ..	51	Nil.		Nil.			Nil.		Nil.		Nil.		
Total	1,032	23	2.2	7	0.7	2.9	2	0.2	1	0.2	7	0.7	3.9

treatment. The highest incidence of grade III reactions alone (2.8%) was observed in cases of secondary anaemia caused by toxemia or infection. A similar incidence in these cases is observed by Zimmerman and co-workers⁽²¹⁾ with fresh blood, and by Edwards and Davie,⁽²²⁾ who state that the administration of blood in such cases is never a satisfactory procedure and is associated with a raised reaction rate. Riddell⁽²³⁾ also states that the administration of blood in cases of hemorrhage rarely causes rigors, but cases of chronic anaemia and sepsis have a high reaction rate.

It was found that all febrile reactions occurred with blood that had been stored for fourteen days or less. It has been shown by Stewart⁽²⁴⁾ in a series of 427 transfusions that the reaction incidence is less with blood stored for six to ten days than with blood stored for a shorter time or even with fresh blood. He considers that this effect is not an artefact due to arbitrary selection of units of time for grouping the results, but may be related to the disappearance of the leucocytes during the first few days of storage. This process has been found to occur rapidly during the first four or five days of storage (Kolmer,⁽²⁵⁾ Bagdassarov,⁽²⁶⁾ and McDonald and Stephen⁽²⁷⁾); it was also shown by Crosbie and Scarborough⁽²⁸⁾ that at the end of forty-eight hours, 30% of the leucocytes had disappeared; by the fourth or fifth day, 50% had disappeared, and of those remaining 90% of the polymorphonuclear cells were degenerate.

In our series the percentage of minor febrile reactions with blood stored for less than twenty-four hours was 2.1%.

It rose to 3.5% for the one to five-day period, and fell to 1.0% for the six to ten-day period, and to 1.0% for blood stored for eleven to fifteen days. If all febrile reactions are classified in this way, our results resemble those reported by Stewart,⁽²⁴⁾ in that the incidence is highest in the one to five-day period (Table VIII), and in that no minor reactions occurred after ten days' storage.

Hemolytic Reactions.—Two other reactions classified as hemolytic are recorded.

One reaction occurred during the administration of one pint of blood (group A, eighteen days old) after thoracoplasty to a patient (blood group A) with pulmonary tuberculosis. The transfusion was discontinued after 300 cubic centimetres of blood had been given, as the patient complained of a hot sensation in the back and several severe rigors occurred. Although this combination of symptoms is usually regarded as due to a hemolytic reaction, no hemoglobin was detected in the urine passed during the twenty-four hours following the transfusion, and there were no further untoward effects. The cross-typing was checked and found to be satisfactory.

The second reaction occurred in a case of ulcerative colitis. The patient (blood group A) was given one pint of blood fifteen days old (group A). No characteristic symptoms developed during the transfusion, but twelve hours later the urine contained hemoglobin. This hemoglobinuria persisted till twenty-four hours had elapsed, by which time the patient was jaundiced. The grouping of the patient's blood and the cross-typing were checked.

Unfortunately, the notes obtained in this latter case were scanty and it was impossible to obtain further information. In these two cases, in which evidence of hemolysis was present, it was impossible to determine the cause of the

TABLE VIII.
Correlation of Number of Reactions with Length of Storage of Blood.

Length of Storage.	Bottles Given and Reports Received.	Number of Bottles Giving Rise to:							
		Febrile Reactions.				Hemolytic Reactions.		Jaundice.	
		Grades I and II.		Grades I, II and III.		Number.	Percentage.	Number.	Percentage.
		Number.	Percentage.	Number.	Percentage.				
Under 24 hours	96	2	2.1	2	2.1	Nil.		Nil.	
1 to 5 days	586	20	3.5	21	3.6	Nil.		3	0.5
6 to 10 days	298	3	1.0	7	2.4	Nil.		1	0.3
11 to 15 days	195	Nil.		2	1.0	1	0.5	1	0.5
16 to 20 days	73	Nil.		Nil.		1	1.4	Nil.	
21 to 25 days	51	Nil.		Nil.		Nil.		7	13.7
26 to 30 days	9	Nil.		Nil.		Nil.		Nil.	
Not known	3								
Total number	1,311	25		32		2		12	

untoward reactions. Rechecking of the blood group of the patient and of the donor whose blood was used, and cross-typing, revealed no error or detectable incompatibility; but in neither case was it possible to retest samples of the blood in the bottles actually used.

Edwards and Davie,⁽⁶⁾ in a series of 1,364 cases, reported five cases of hæmoglobinuria following transfusion with blood stored for more than three weeks. Three of the patients were suffering from secondary anaemia associated with infections, in which these workers considered there would almost certainly be an associated toxic nephritis which might produce a predisposition to hæmoglobinuria. The two other cases were one of ulcerative colitis, in which blood three days old was given, and one of ectopic pregnancy, in which blood twenty-one days was given and an autotransfusion was administered at the time of operation. De Gowin and Hardin⁽¹⁰⁾ reported five cases of hæmoglobinuria and one incompatible transfusion following the administration of blood less than seven days old, in their series of 1,458 transfusions. Paterson⁽¹¹⁾ recorded hæmoglobinuria in a case of aplastic anaemia after a transfusion of 540 cubic centimetres of blood twenty days old. Brewer and co-workers,⁽¹²⁾ Biddle and Langley,⁽¹³⁾ Jewesbury,⁽¹⁴⁾ and Leedham-Green⁽¹⁵⁾ reported no hæmolytic reactions in their series.

Jaundice.—In the present series seven cases of jaundice (0.9%) occurred. Jaundice was observed in a patient with menorrhagia, after two pints of blood three days old had been given, and in a case of carcinoma of the cervix associated with a subphrenic abscess when blood (one pint) was given after five days' storage; a rise in temperature to 102° F. was associated with the jaundice in this latter case. Mild jaundice was recorded two days after blood (one pint) stored for six days was given to a patient admitted to hospital with fractured limbs; severe jaundice was observed in a case of streptococcal septicæmia following the administration of one pint of blood fourteen days old (this case has been described in detail in the section dealing with febrile reactions). In three of the cases jaundice followed the administration of blood stored for more than twenty-one days.

One of these patients, suffering from carcinoma of the stomach, was given two pints of blood (twenty-two and twenty-three days old) prior to operation; the result of the transfusion was satisfactory, but the patient developed mild jaundice, which had disappeared three days later.

Another patient was suffering from hæmatemesia and melena associated with an enlarged spleen (no peptic ulcer was present on X-ray examination), and jaundice was observed one day after the administration of two pints of blood twenty-three days old. A further transfusion of three pints of blood twenty-four, twenty-two and seventeen days old on the following day was associated with improvement in the patient's condition; but the jaundice became more pronounced. The spleen when removed at operation was found to be nine inches long and adherent; no time was given to examining the liver, as the patient took the anaesthetic badly. The patient made an uneventful recovery.

In cases in which incompatibility can be excluded, the appearance of jaundice without any other untoward symptoms is primarily due either to the transfusion of blood in which there is preexisting hæmolysis of the red cells in excess of normal, or to unduly rapid destruction of the transfused cells, both of which are likely to occur when old stored blood is used. Thus Wiener and Schaefer,⁽¹⁶⁾ in a study of the fate in the recipient's circulation of transfused erythrocytes of citrated blood, have shown that only patients receiving blood twenty and twenty-one days old became visibly jaundiced, although the serum of those receiving blood stored for shorter periods may show an icteric tinge. The capacity of the liver to deal with the liberated hæmoglobin may also, however, play a part in the development and persistence of jaundice. In the present series the occurrence of transient jaundice was highest in the cases in which the blood given had been stored for more than fourteen days (Table VIII). This increase, however, was accounted for by the occurrence of jaundice on three occasions in two cases after massive transfusion of blood stored for more than twenty-one days. Therefore, although it is reasonable to relate the occurrence of jaun-

dice to the age of the transfused cells, the history of the patients in whom jaundice was observed cannot be neglected, and in these cases may have been an important contributory factor.

De Gowin and Hardin⁽¹⁰⁾ reported one case of jaundice in a series of 1,458 transfusions, Belk and co-workers⁽¹⁷⁾ three cases in 400 transfusions of preserved blood, Fox⁽¹⁸⁾ fourteen cases in 100 transfusions, and Edwards and Davie⁽⁶⁾ seven cases in a series of 1,364 transfusions. No cases were reported by Leedham-Green⁽¹⁵⁾ or by Biddle and Langley⁽¹³⁾ in series of less than 60 and 150 cases respectively. Thus there is a considerable variation in the reported incidence of jaundice.

Other Reactions.—An urticarial reaction was observed twenty-four hours after the administration of blood (one day old) to a patient who had had a partial gastrectomy. Death at varying intervals after but not as a result of transfusion, was reported in fourteen cases. In twenty cases death occurred during transfusion or within the next twenty-four hours. All these patients died from shock (post-operative or due to multiple injuries) or from acute blood loss, so it is unlikely that they would have been affected adversely by the giving of stored blood. The above figures indicate that 79.9% of all the transfusions given were not associated with any reaction, and were considered to be of benefit to the patient; 8.3% of the transfusions were of temporary benefit only, and in the remainder the patient's condition was too grave to be influenced by transfusion. Two fatalities which followed the administration of three pints of stored blood more than fourteen days old are not included in the above series, as they occurred after the period under review; they will be reported in detail in a later communication.

DISCUSSION.

In the organization of a "blood bank" one of the major problems is to keep the balance between the maintenance of adequate supplies of blood at all times and the prevention of excessive waste. In this series the blood of 19.8% of the donors was discarded, and 51% of this loss was due to the blood's not being used before the twenty-one days' storage period had elapsed. This figure was higher than that reported by Biddle and Langley (8.6%)⁽¹³⁾ and by Cameron and Ferguson,⁽¹⁹⁾ who stated that of the 1% they wasted only 2.2% was accounted for by blood discarded because of age. Edwards and Davie⁽⁶⁾ found a wastage factor of 9.1% in their series and consider that a constant factor of 7% would occur. The major cause contributing to the observed wastage was the establishment at four metropolitan hospitals of subsidiary banks supplied by the central bank. This also increased the difficulty of ensuring that adequate stocks of blood were maintained at each centre. However, the value of having supplies of blood situated at all major hospitals even in one city cannot be disregarded, and the distribution described overcomes the difficulty of setting up numerous small "blood banks" in any one area. From the figures observed in this series there would be little economy in the wastage of blood by replacing small "blood banks" with such a system of distribution. However, the saving of accommodation, equipment and trained staff is of paramount importance. The quantity of work involved in the maintenance and operation of a "blood bank" is more rapidly and efficiently dealt with in an organization that provides special and adequate accommodation for the taking of blood from donors and for the laboratory procedures entailed. The figures for the first six months of 1944 show that with increased use of blood at all "banks" (55 pints per week), it has been possible to reduce considerably the wastage factor. The staff operating this "bank" have also been engaged in the preparation and supply of pooled human serum for civilian needs.

The various types of reactions following the administration of the blood collected have been discussed, and it was found that the incidence of all reactions compared favourably with that observed by other workers. This incidence, 3.6%, was obtained from the reports returned giving the results of the administration of 1,311 bottles of blood. No reports were received concerning 586 transfusions, and

although it is probable that there were no major reactions among this group, this assumption has not been made.

Although no series of transfusions with fresh blood collected under the same conditions was available for comparison of the incidence of reactions in fresh and stored blood, in this paper, the figures obtained in this series can be compared with those obtained with fresh blood by Patton⁽³⁰⁾ (0.9%), by Zimmerman and co-workers⁽³¹⁾ (3.0%), by Lewisohn and Rosenthal⁽³²⁾ (1.5%), by Riddell⁽³³⁾ (11%), and by Fell⁽³⁴⁾ (4.8%). Most of the reactions recorded by these workers were febrile, and they considered that the majority of these were due to failure to eliminate extraneous debris or pyrogenic substances from the apparatus or sodium citrate solution. Kilduffe and De Baakey⁽³⁵⁾ also state that the faulty cleaning of "blood bank" equipment is the most frequent cause of post-transfusion reactions. In this series careful attention has been given to the cleaning of apparatus, a procedure which is found to be more than justified by the time relationship of the maximum incidence of reaction to the age of the blood. No febrile reactions were observed with blood given after storage for more than 14 days. The varying incidence of febrile reactions with different periods of storage suggests that the majority of these reactions are due to the toxic effects of disintegration of leucocytes, and supports the view that very few are due to the presence of pyrogens, which would not be influenced by the age of the blood. No evidence has been found to support the view of Edwards and Davie⁽³⁶⁾ that severe (grade III) febrile reactions are increased by the age of the blood and that it is better from this viewpoint not to give stored blood more than ten days old.

In the discussion of the hæmolytic reactions and the cases of jaundice, the relation of the age of the blood given and the indications for the transfusion have been considered. Only two hæmolytic reactions were observed. In one case the only symptoms (lumbar pain and rigors) were immediate, suggesting transfusion of incompatible blood, though this could not be shown. Both these reactions occurred with blood stored for more than fourteen days, and although it may be assumed in these cases, as no other case was demonstrable, that the period of storage was the cause of the reaction, it should be noted that other workers whose figures have been quoted have recorded similar reactions with blood stored for less than seven days and even with fresh blood.

It has been shown in this series that despite the numerous changes which are known to occur in stored blood, blood which is collected aseptically into suitable anticoagulant solutions and stored under optimum conditions for periods up to twenty-one days, can be given without any increase in the incidence of reactions that can be observed after the administration of fresh blood. No types of reactions were observed that were not already known to be associated with the use of fresh blood (De Gowin and co-workers).⁽³⁷⁾ It should be emphasized, however, that in view of our present knowledge of the changes which occur during storage, stored blood should not be used indiscriminately, and that the cooperation of the medical officers using "bank" blood with those responsible for the operation of such a "bank" is necessary. Thus in cases of acute hæmorrhage, post-operative shock and secondary anaemia due to chronic blood loss, stored blood is as efficacious as fresh blood, while in the treatment of toxæmia, the infections and blood dyscrasias the use of blood stored more than two or three days is and has been for some time known to be unsatisfactory for the patient and contra-indicated. It should be stated that in this series which covers the development of this "blood bank", blood stored for long periods has occasionally been given in unsuitable cases, and in some of these reactions are recorded.

There is no evidence from this series to support the unfounded prejudice against the use of blood stored for more than seven days.

The effect of warming the blood prior to use, which Brewer and co-workers⁽³⁸⁾ found to be an advantage in preventing reactions, but which De Gowin, Hardin and Swanson⁽³⁹⁾ and Glinsky⁽⁴⁰⁾ consider unnecessary, cannot be assessed in this series, as in many cases blood was given

without heating and within ten to fifteen minutes after being taken from the refrigerator. The danger of local overheating of the blood while warming it in a water bath, if the temperature of the bath is above 37° C., cannot be over-emphasized.

SUMMARY.

1. The operation and maintenance of the "blood bank" established in January, 1939, at the Royal Melbourne Hospital by the Red Cross Blood Transfusion Service (Victorian Division) over the first four years of its existence are reviewed. During this period blood was collected from 2,546 donors. The blood collected from 2,042 donors was used, and records are available to show where and when 1,897 bottles of blood were given. The average volume of blood collected per donor, the volume of anticoagulant being excluded, was 500 cubic centimetres.
2. Blood was collected from donors of groups A, B and O; 63.1% of the donors belonged to group O, 36.3% to group A and 0.6% to group B. The total wastage service was 19.8%; 12.5% of the loss was due to the discarding of old blood. The establishment of four subsidiary "blood banks" caused a great increase in this wastage. It was found to be uneconomical for a general "blood bank" to cater for small volumes of blood or to collect blood from group B donors.
3. The cleaning of apparatus, with a product known as "Clensel" used for all glassware, is described. The importance of careful and continued attention to this cleaning of apparatus for the successful operation of a blood bank is discussed and emphasized.
4. The blood collected was stored as a routine procedure for periods up to and including twenty-one days; 83.2% of the blood collected was given during the first fourteen days of storage, 12.5% from the fifteenth to the twenty-first day and 4.2% from the twenty-second to the thirtieth day.
5. Of the blood collected, 5% was stored in the solution recommended by Duran-Jorda and 92% in a modification of this solution.
6. Reports on the results of the administration of 1,311 bottles of blood to 1,032 patients were obtained. Reports were not received concerning 586 bottles given.
7. An analysis of the reports returned showed that 47 (3.6%) of the bottles of blood used gave rise to 40 reactions. This includes 30 febrile reactions, seven of which were severe, seven cases of jaundice, one case of urticaria and two reactions classified as hæmolytic.
8. The relation between the incidence of the various types of reactions, the period of storage and the diseases from which the patients were suffering is discussed.
9. Two deaths which occurred eleven months after the completion of this series will be reported in a later communication.

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PROBLEMS OF ADOLESCENCE IN WAR.¹

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No apology is offered for inviting members of this section to discuss the problems of adolescence—problems rendered more acute by the influence of a world at war on the youth of both sexes. Unless these problems are studied from the viewpoint of mental hygiene by those qualified to understand and assist, the future for many of our youth will be fraught with uncertainty and doubt, and the rebellious and maladjusted adolescent of today may become the criminal or psychotic of tomorrow. Even in normal times the burden is great and for many it is too grievous to carry; how much more onerous must it be for adolescents to adapt themselves to a changing world differing from that which they were taught to expect during their childhood. Environmental factors are of paramount importance in the moulding of character and personality, and when the environment itself is in a state of flux in the familial, social, national and international spheres, the adolescent is likely to respond with a number of unexpected reactions.

Psychologically, adolescence bridges the gulf between childhood on the one hand and adulthood on the other; it commences at about the age of twelve years and ends at a period not so accurately defined between the ages of eighteen and twenty-one years. At its beginning the individual is sheltered by family and school; at its end he assumes the rights and responsibilities of citizenship on terms of social equality with his elders. This transitional period involves an adjustment process fraught with many difficulties. The adjustments in the emotional sphere are particularly profound and may decide the reaction of the individual to many situations in after life. The psychologist must beware of weaving a pattern of maladjustment about this period of life and of hiding its true character. Some of the special features of adolescence are of importance, in that they represent the adolescent's endeavour to detach himself from the family group and to prepare himself for the tasks ahead. Many of these are resisted by the parents with a misdirected idea of "training a child in the way it should go". Incidentally, it is stated that scholars have recently corrected this translation of the verse in the Old Testament to: "Train up a child in its way and when he is old he will not depart from it."² These features, which will be touched on, are self-consciousness or shyness, reticence, moodiness, intellectuality and claims to independence.

Self-consciousness is not used as referring to the awareness of the self as an individual separate from other individuals, but as being synonymous with shyness. It is accompanied by a feeling of isolation and is the cause of much unhappiness. It is a burden to the adolescent and a nuisance to others who cannot view the position from the viewpoint of the shy person. Sometimes some minor physical imperfection or lack of efficiency in sport or scholastic attainments is the cause, and the adolescent feels that people are noticing him, whereas they may be uninterested in him. The parent's duty is to find out the cause of this shyness by sympathetic contact, and when it has been ascertained, to realize the all-importance of a cause which may seem trivial to an adult. If no attempt is made to locate and treat the cause the adolescent may react in two ways. The first of these is by a longing to recapture situations in which life was free from the dreaded sense of isolation, and to regress to the tender emotions associated with others usually in the past. This route may lead to a disintegration of the personality and to schizophrenia. The second way is by the adoption of defences against the isolation and the teasing which many persons in the subject's environment adopt. Thus surly

¹ Retiring chairman's address, read at a meeting of the Section of Neurology, Psychiatry and Neurosurgery of the New South Wales Branch of the British Medical Association on December 5, 1944.

and aggressive tendencies may appear, and attack is adopted as the best means of defence, so that the sensitive person hides his sensitiveness sometimes even from himself. His weak points are defended by his armour of apparent "toughness" and he is left alone. From a study of case histories it is apparent that many parents do not regard shyness as a problem in adolescence, but either treat it with indifference or are annoyed by its appearance and endeavour to cure it by scolding.

Another feature of adolescence displayed with great frequency is reticence or reserve. The spontaneous expression of thought and feeling of the child is held in check by the development of the ego from a unity with its surroundings to that of its place as an individual. Reticence may come from the sense of being betrayed, with the knowledge that the world is not what the child was led to believe—that the good do not always prosper and the wicked do sometimes flourish. The glamour of childhood passes and the knowledge of the world as it really is begins to appear. Reticence may be the natural outcome of fear, and the onset of puberty may be terrifying to a child, for there can be no true preparation of the imagination for a wholly new experience. On the other hand, if conscience has been called by the parents to their aid to stifle sex curiosity in childhood, then the lips of the adolescent may be for ever sealed. Reticence from fear of ridicule is not peculiar to adolescence, but it is more acute at this age when the opinion of others counts more than in later life. Fear of seeming ignorant in the eyes of others drives many an adolescent into silence. Reticence may show itself under the guise of lofty indifference, by a refusal to recognize any good in anything instituted by elders, or by an insolent bravado, an outward willingness to give voice to ideals not acceptable to elders. The roots of reticence lie in the past, and treatment should be preventive in childhood by a preparation for life as it is, not as the parent would like it to be, and by a gradual preparation for the problems the child will face at the period of adolescence.

The moodiness of adolescence is another of its well-recognized features. Perhaps one should say more correctly the changes of mood, for these are usually transitory and a reflection of immediate circumstances. A mood sums up our attitude to the world and is as much a product of inner needs as of external circumstances. It is because of his feeling of bewilderment and insecurity that the adolescent is subject to moods. Purely physical causes, such as pain or discomfort or toxins absorbed from tonsils, teeth or bowels, account for some of the depressive moods, whilst psychologically they may arise from boredom caused by uncongenial occupations or companionship, or as the result of a too rigid environment or from the sense of being a burden to people, of being helpless or inadequate. Moods of elation may follow a sense of well-being, or a word of praise from a loved one, or the successful completion of a difficult task.

Parents must realize that adolescents are greatly disturbed by their own moodiness, and reproach only increases their sense of discomfort without removing its cause. The adolescent tends to take sides with anyone who restores his feeling of self-esteem and security, and he is susceptible to any influence, good or bad, which even for a moment shows up life in rosy colours. These influences may completely alter his former attitudes to his family, his religion, his politics and his sense of right and wrong. If his moodiness is not sympathetically understood and treated with imagination, he may further retreat from his environment and the condition become more pronounced.

The fact that the adolescent possesses intellect, that faculty of the mind by which we reason and know, is not always given its full value by the adult world. By mid-adolescence maximum intelligence has been attained and the individual can hold his own with adults in mental tests. From this time on he acquires knowledge and experience, whilst sympathetic understanding of others must develop before wisdom is gained. He can think clearly and express problems in reasonable language if they are remote from his personal problems. But we must not delude ourselves with the belief that he is guided by

reason alone, and refuse to admit that feelings and maturing instincts are not influencing his thoughts and words. He must relate causes and effects in a more far-reaching way than he ever attempted before in order to direct his own actions and also to gain a sense of values on which he can rely. He spends much time in theorizing, and runs the danger of making thinking a substitute for living. He is intellectually impatient, and this fact is likely to breed intolerance and to colour all his values. Much of the impatience of the adult with the talkativeness of the adolescent would be lost if the adult looked on it as an effort on the adolescent's part to realize himself as an independent person. But provided there is no legacy of early emotional stress or present family intolerance, a solution to intellectual impatience will come automatically, and efforts will be directed to a task determined by some special abilities which should preferably be selected by tests for vocational aptitude.

There are two problems of paramount importance with which every adolescent has to deal. These are: (i) the necessity of adjustment to the urgency of the sex drive, and (ii) the necessity of freeing himself from the family circle. The task of adjustment to each of these problems is harder for the adolescent in war time, when his environment is itself subject to unusual stresses and strains.

The development of the secondary sexual characteristics is a sign to the adolescent that he is leaving behind the pleasures and irresponsibilities of the child and taking on the responsibilities of being grown up. Were he a member of a savage race, such an event would be made the occasion for traditional tribal ceremonies and his initiation into full manhood. As he is civilized, the alterations in his bodily economy make him feel awkward, and his new-found manhood has to be kept in abeyance for a period of years, during which his dependence on his family persists. Here is a potent cause of emotional unrest, and the adolescent has to direct the energy of this instinct into useful channels or to depart from accepted standards of conduct and break the moral code. In war the adolescent girl may be fearful about her chances of marriage and the future that is in store for her. The whole question of sexual morality is distorted, and she may feel that sexual promiscuity is acceptable in the community. Only the strength of her own self-regarding sentiment can come to her aid and prevent her from yielding to the glamour of illicit companionship, easy money and a "good time". The task is harder for her if she is of retarded mentality, as although she resembles her normal sister in almost every attribute save that of mental capacity, she is required to cope with situations as complex as those which face her more able companions without their equipment of mental ability.⁽²⁾ Thus, while we expect that the sexual delinquents who become inmates of institutions include a large percentage of these retarded girls, we must not be blind to the fact that some are of superior intelligence and are in revolt as a result of incorrect handling in home, school or community. In a series of child-guidance studies, the outstanding factor in the life of each child was lack of parental affection. The more severe the antisocial behaviour, the more complete and long-standing the emotional deficiencies are found to be. This is the great injustice hidden in most histories of delinquents; it is more significant than any other environmental privation and accounts for the occurrence of antisocial behaviour in rich and poor. The child misbehaves because he is unhappy and has discovered this means of maintaining his emotional balance. It becomes his way of obtaining satisfaction and asserting himself. The price of punishment seems to him worth the gain.⁽³⁾

The following history is typical of girls of superior intelligence subject to family discord and denied sex instruction by the mother.

At the age of thirteen years the subject was taken away from school (second year at high school), owing to her mother's ill health, to manage the house, her two elder sisters being employed. Her father was always bad-tempered and addicted to throwing articles of food at his wife and family. When at the age of fifteen years she asked her mother about sex matters, she was told that there was

"plenty of time for that later on". Her elder sisters were never nice to her and made her a drudge. She had been promised 10s. a week for doing the housework, but never received anything. Her mother died early in 1944, and six weeks later her father began to keep company with another woman and is now rarely home. The subject was left home alone and had no pocket money or attractive clothes. She ran away from home, as she said she wanted to be independent. She was returned by the police and later consorted with servicemen, who bought her clothing. She has an intelligence quotient of 125, is bright and alert, and desires to take a commercial course and work in an office.

Another girl, aged fourteen years, with a mental age of sixteen years, always retiring and shy, has a stepfather who is always quarrelling with the family. He resented this girl's reading books and took them away from her. She ran away from home and was returned. She then became, as she puts it, "allergic to school", and played truant. She met another girl who introduced her to servicemen with whom she associated for some weeks before coming under care. She is reported as being reserved, a great reader and interested in politics, and with no desire to return to her home. Her ambition is to become a nurse.

A third girl, aged twenty years, attends a psychiatric clinic because of "fits" which occur when she is "upset". She is the drudge of the family, and is looked on with disdain by a sister two years younger, who brings servicemen to the house where they drink and carouse at night. This is tolerated by the mother, who hopes this daughter may make a good match, and tolerated by the father, so long as not too much noise is made. Neither parent will accept our patient's protestation that the family name will suffer by such happenings. She hopes to be admitted to hospital for treatment for her "fits" and to escape from an intolerable situation.

In none of these cases have the parents recognized the adolescent's claim for independence. Sometimes this fear of granting a measure of independence to their children is a projection of the adults' own fears which have cramped their own life. Again, parents are often suspicious of forces outside their circle which are impinging on the adolescent, and neglect the fact that any show of suspicion will drive the adolescent farther in the undesired direction. Should they attempt to take drastic action, their relations with the adolescent will ever afterwards be different. The authority of parents can be based only on friendship throughout childhood.

This leads us to the second great problem of the adolescent, namely, the necessity of freeing himself from the family circle. There is no special formula for this; it occurs quietly and automatically, and difficulty is evident only when its steady progress is interfered with. It is important for the parents to realize that any mismanagement on their part or serious difficulty of adjustment on the part of the adolescent may encourage him to turn away from life.

Children identify themselves with their parents, and during adolescence gradually detach themselves from these parental images. During a war period environmental factors come into play, and by reason of war service work in essential employment involving long hours of duty or voluntary work connected with the war effort, parents spend less time with their children. Difficulties of transportation and the incidence of rationing serve to diminish the effectiveness of parents in the supervision of their children. After years of deprivation owing to economic stress, many parents possess surplus money and are devoting much of their leisure time to their own recreation. In quite a few families children see their parents as members of a family circle only on one day a week. Many children and adolescents, too, are devoting their after-school hours to different forms of part-time employment.

The employment situation also has changed for the adolescent during the war period. In contrast to a few years ago, when it was difficult to place an adolescent in a vocational pursuit, he can now and indeed must obtain employment. He can command high wages, and this new-found wealth is frequently misused and contributes to much of the irresponsible activity on the part of those adolescents who until recently have had to live on a restricted budget. The male adolescent knows he has

only a short period of employment at high wages before he becomes liable for war service. He is made aware of his new-found importance by the increasing demand on his services for rural work, in industry and in war factories as the need for manpower becomes more acute. Little attention can be paid to the fact that these young people are in the formative stages of development and need to look upon work as an educational process in preparation for future responsibilities. They receive the rewards of labour before they know anything of its dignity.

The necessity of recognizing the problems of adolescence is of paramount importance. If no attempt at treatment of these problems is made, a harvest of delinquency, criminality, pathological alcoholism and mental disorder will be reaped. The early recognition and therapy of emotional conflicts and behaviour disorders in children by paediatricians alert to the possibilities should accomplish a great deal towards averting emotional disturbances later in life and thus make a major contribution to mental health.⁽⁵⁾ Youth requires the opportunity of taking its problems before a sympathetic and understanding observer at some clinic unconnected with any hospital with its implications of ill-health. Possibly some extension of the present child guidance clinic would suffice; but to overcome the expressed resentment of some of the adolescents who have attended such clinics the name would require to be changed.

Some attempt must be made at group psychotherapy by attempting to keep adolescents in contact with one another from the time of leaving school until they come of age. The young adolescent longs to merge both ideals and actions in a group. By joining a club or other group he can feel himself within a circle, and by realizing that similar groups elsewhere have different activities and interests his outlook is widened. Many such excellent organizations are already in existence or in project, and vary from local post-school organizations to a centre embracing all the community. Here it would seem that youth should have a share in direction and management and be allowed to translate some of its ideas into action. In this connexion it is interesting to note that the initial wartime increase of juvenile delinquency in England has been halted by the establishment of "youth service squads", which give young people an opportunity to do something worth while for the community in their leisure time. In addition recreational facilities, which had been discontinued at the outbreak of war, have been restored.⁽⁶⁾

Since family discord is responsible for much of the anti-social behaviour of a section of our youth, some attempt must be made at adult education. This is an extremely difficult problem, as those adults most requiring education in child management would be resentful of such a project and would not cooperate. Still, with the concerted support of the medical profession and the lay public, with a greatly increased number of social workers in direct contact with adults and with the propagation of knowledge of a kind that can be digested mentally by the public, the problem is not insuperable.

In the national sphere our peace aims must be clarified to give the adolescent a feeling of security and faith in the future. He has lived through a stormy generation, during which the family and society have suffered shocks resulting in disillusionments that have been incorporated in the attitudes of our youth. His parents lived through a war that was to end all wars, an aspiration not attained. He was born and reared through a world depression, which took its toll in family disorganization and individual maladjustment. He attended school during a period when the ideals of democracy so vital to him seemed to be betrayed by the appeasement of aggressor nations. In view of his tendency to be affected by the behaviour of his elders, both in the family and in a social and national sphere, he has not been given the brightest of examples to follow.

But we can give him a little counsel and prepare him for life after the war. He must be prepared for a life that is going to be different, just as life after the last war was different. He must become accustomed to the concept

of change instead of feeding on the security of a past mode of undisturbed living. Emphasis must be placed on the fact that there will be a world after the war, that the world of tomorrow will be different, yet able to be lived in, and that it is his heritage to shape and mould this world for the good of mankind.

Youth will come out of this war either rebellious or broken in spirit, and it will be necessary to give the adolescent a feeling of hope and trust. We shall have to deal with the consequences of delayed education, with the frustrations incident to the loss of goals and with the aggressions that have been let loose during the conflict. The hate implanted by the necessity of winning the war will be an important factor to be dealt with, whether it expresses itself in delinquency or in neurosis. Many damaged personalities will require treatment and their rehabilitation demand all our efforts.

We must not forget that the two apparently opposite conditions—submission and aggressiveness—render youth susceptible to exploitation by the dictator, who from youth movements gained the support for the Fascist State. For the preservation of democracy we must make sure that the adolescent of today will become the mentally sound and emotionally healthy adult of tomorrow.

For in the last analysis a political unit can never excel in quality the capacity of its constituents for self-management, and adults who in their childhood or adolescence are subjected to conditions which result in personality distortion, uncorrected and untreated, are thereby hampered in their capacity for such self-management and hence in their contribution towards the democratic way of life.

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LIVER ABSCESS WITH SPECIAL REFERENCE TO SYSTEMIC INFECTIONS.

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THIS paper is mostly concerned with abscess in which the organisms have reached the liver by way of the hepatic artery. Brief reference is also made to portal vein infections, because of certain differences which are said to exist between portal and systemic infections. Other causes of liver abscess, such as amoebic hepatitis, suppurative cholangitis, actinomycosis or infected hydatid cyst of the liver, are not included. Although penetrating and non-penetrating wounds of the liver are said to initiate abscess formation, they would appear to be of a minor aetiological importance. Interest in the subject was stimulated by the occurrence of three cases of liver abscess within a few months at a military hospital where pyæmia was most uncommon though hundreds of war wounds were treated. Eight cases of blood infections of surgical interest occurred. They were all due to the *Staphylococcus aureus*. Three cases of septicæmia occurred, in each of which a wound was the primary focus. There was one liver abscess due to metastasis from an infected wound. Two liver abscesses and two perinephric abscesses were found in soldiers who had no wounds.

Aetiology.

When the portal vein is the means of access of the infection to the liver, appendicitis is by far the most common initial lesion. Abscess of the liver is most likely to arise in cases of neglect. The next commonest focus is

the area drained by the hæmorrhoidal veins. Infection may occur after operations on the anus or rectum. One often wonders why it is not more common. It is also possible that a small thrombosed pile, forgotten by the patient and overlooked by the surgeon, may cause liver inflammation of so-called unknown aetiology.

As in the cases reported here, the liver can be affected by systemic pyæmia. It is obvious that in cases of general septicæmia and gross pyæmia the liver may be only one of many organs involved, and abscesses so caused excite no comment. But it must be pointed out that in the three cases of septicæmia, all fatal, that occurred at the same hospital over a period of twelve months, there were no signs clinically or *post mortem* of metastatic abscesses of the liver. The main object of this paper is to draw attention to the less acute type of lesion comparable to carbuncle of the kidney or Brodie's abscess of bone. This has been called "primary idiopathic abscess of the liver" (Dixon and Murphy, 1932) and "single pyogenic liver abscess" (Rothenberg and Linder, 1934). The primary focus is often unknown, and the systemic nature of the infection is assumed without much apparent justification; nevertheless there is some evidence to support this. In two of the present three cases the primary focus appeared to be obvious—an infected wound in one case and chronic suppurative dermatitis in the other. In the third case the only known focus was an infected Melbomian cyst. In all three cases the organism was the *Staphylococcus aureus*. This appears to be the most frequently recorded infecting organism in those abscesses held to be metastatic or of unknown aetiology, whereas in known portal infections, the commonest organism found is the *Bacillus coli communis* (Ochsner *et alii*, 1938; Howard, 1942).

Pathology.

In portal pyæmia the liver usually contains multiple small abscesses, especially in the right lobe. This localization in the liver is said to be due to the distribution of most of the blood from the superior mesenteric vein to the right lobe. The liver is moderately enlarged, but by no means so big as in the case of a single abscess. Large abscesses are not common—or rather it has been assumed, sometimes without complete justification, that large single abscesses have been caused by infection outside the portal area. In fatal septicæmia, hepatic involvement is not a gross or common feature, and when abscesses occur they are small and multiple. In the type of lesion particularly under discussion here, the liver is often larger than in any other condition. The right lobe is the usual site of the abscess, as in all three of the cases recorded. Why this should be so has not been explained; but some explanation will doubtless be forthcoming, however fanciful. The fact that the right lobe is the larger and receives the larger blood vessel is presumably relevant. Although the abscess may finally appear to be single, it is probable that in many cases it has been formed by the coalescing of several abscesses. There is nothing unusual about their structure. An interesting feature of the abscesses recorded in the literature as systemic in origin, is the large number of cases in which the pus has been sterile. In several series the mortality amongst cases associated with sterile pus was higher than amongst the rest. Otherwise staphylococci and streptococci are the predominating organisms.

The abscess may invade the subperinephric or perinephric area. This has been reported in 5.8% of 85 cases (Keefer, 1934). Rupture into the adjacent pleural cavity is apparently possible (Dixon and Murphy, 1932). A more common finding is basal congestion from relative immobility of the lower lobe of the lung.

Symptoms.

In suppurative pyelophlebitis there is considerable variation in the time between the onset of the causative lesion and the commencement of symptoms suggesting liver involvement—intervals of three to 270 days have been recorded. The history, as a rule, is fairly definite: firstly, there has been infection in the portal area; secondly, there are symptoms and signs of general toxæmia with local liver involvement.

A boy was examined recently who had portal pyæmia with a rather typical onset. The temperature remained elevated after appendicectomy for severe appendicitis of forty-eight hours' duration. Ten days after operation he had rigors, pronounced toxæmia and a tender liver.

These features are typical, except that in most recorded cases the causative appendicitis has been neglected or for some other reason operation has been delayed.

The history in the case of the single pyogenic abscess is by no means so clear. There is always the preliminary period of toxæmia, but it is rather more insidious in onset. Attention is frequently not directed to the right upper quadrant of the abdomen for some time. In one case there were many weeks of "pyrexia of unknown origin" in which the suppurative hepatitis was obscured by coexistent septic pulmonary infarcts and a perinephric abscess. In the second case a small wound of the heel was followed after orthodox treatment by an unexplained rise in temperature. In the third case, the patient had had suppurative skin lesions of minor severity for some three months before his admission to hospital for vague upper abdominal pains which suggested chronic cholecystitis. Apart from these three differing initial histories, the subsequent symptoms were identical. The patients had an elevated temperature without rigors, the general symptoms of toxæmia and, often late in onset, a consistent dull pain in the right hypochondrium passing straight through to the back. The pain is experienced more anteriorly than posteriorly. Accompanied as it often is by fullness and nausea, it resembles that due to chronic cholecystitis. It passes straight through to the lower ribs posteriorly if it radiates at all. Its location posteriorly is higher than the renal angle.

Signs.

It is impossible to say how large a liver abscess must be before it can be detected clinically. A watch was kept for the condition. Much also depends on the site of the abscess in the liver. In all these cases, when localizing signs eventually appeared, attention was directed to the back, so that perinephric abscess was suspected and medical officers who had not seen the condition before were hard to convince. Of the three cases, posterior exploration by aspiration was carried out on several occasions in one and in another open operation was performed.

At first, inspection and palpation of the abdomen revealed no abnormality but some slightly increased resistance in the right hypochondrium. Percussion of the liver revealed no abnormality. On bimanual examination of the right renal area, fullness was found posteriorly, suggesting nothing else but a perinephric abscess. This fullness may later become apparent on inspection, spreading over the last two ribs as well, and being accompanied by slight œdema and tenderness.

Quite suddenly in all three cases an enlargement of the liver, palpable from the front, made its appearance. This enlargement is smooth and tender and may reach a point four fingers' breadth below the costal margin. I have been impressed by the sudden appearance and rapidity of development of this swelling. The liver enlargement is characteristically downward. The diagnosis is then easy. The general signs of toxæmia, such as pyrexia, wasting, sweating and leucocytosis, need no comment.

The *Staphylococcus aureus* was grown from the blood in one case. In another case attempted blood culture was without result, and in the third no culture was attempted.

Jaundice is uncommon in either pylephlebitis or other pyogenic abscesses; it did not occur in any of these cases. Ascites has rarely been found (Snyder *et alii*, 1935). It was severe in the case of the boy with portal pyæmia, which has been mentioned earlier. The X-ray appearances are rather beyond the scope of this paper. Rothenberg and Linder state that the X-ray findings are negative, and that was my experience in the only two cases in which a radiological examination was made. On the other hand, several observers have noted immobility and elevation of the right half of the diaphragm and have made detailed comparisons between this appearance and that due to subphrenic abscess.

The foregoing symptoms and signs may appear to be indefinite, as they actually are; but as in subphrenic and perinephric abscess, the characteristic picture is one of toxæmia with few localizing signs. However, the very negative nature of the clinical picture is important.

The diagnosis is confirmed by exploration—preferably by open operation and not by aspiration. There should be no haste in operating. A delay of a week, when the condition of the patient warrants it, may give added information suggesting where this exploration should be made. Secondly, pointing of the abscess may make the procedure safer. Further, exploration is not only a diagnostic procedure, but is the first step in operative treatment, and should not be performed across clean cavities or tissue spaces. This lack of need for great haste warrants the trial of treatment for several medical conditions which were common in the geographic region where this hospital was situated. For example, it was justifiable to give emetine to a soldier with liver enlargement and unexplained pyrexia.

Diagnosis.

Diagnosis is frequently a process of exclusion. In the early stages of the disease all the possible causes of pyrexia of obscure origin must be considered. Sooner or later localization of the lesion to the right upper quadrant of the abdomen occurs, provided that abscesses in other organs do not confuse the picture. It was found that five conditions needed consideration—amœbic abscess, subphrenic abscess, perinephric abscess, cholecystitis and pyogenic liver abscess. The administration of emetine to one patient has already been mentioned, as has the absence, in these cases of hepatic abscess, of any characteristic X-ray appearance suggestive of a subphrenic abscess in either an anterior or a posterior intraperitoneal position. In cholecystitis no difficulty is experienced in diagnosis.

On the other hand, perinephric abscess is hard to exclude. In the present three cases liver enlargement could be detected; but in the early stages before this occurs the differentiation may be impossible without exploration.

Treatment.

The problems that arise in local treatment can be well illustrated by reference to the methods used in the three cases reported here. It will be assumed that methods will be employed to combat the general toxæmia as well as the specific infection.

In the first case diagnosis was rendered difficult by the presence of other pyæmic abscesses in the lung and right perinephric region. The case may be taken up at the point when the patient was first seen by me.

He was in a desperate condition with toxæmia, and presented a generalized tender enlargement of the right lobe of the liver with œdema over the lower ribs posteriorly, making diagnosis easy—so easy that the accompanying perinephric abscess was missed. Under local anaesthesia, with the patient still in bed, a portion of the tenth rib in the posterior axillary line was removed, the wound was packed firmly to obliterate the phrenico-costal angle of the pleural cavity, and five days later exploration of the liver through this wound was performed. On pus being found, a large Malecot catheter was introduced through the appropriate introducer and constant negative suction was instituted. The subsequent history was that the small abscess was emptied and more abscesses were found further in.

It was found at the post-mortem examination that the perinephric abscess was being drained at the same time, but inadequately. The hopeless nature of the condition was obvious, for beside staphylococcal abscesses of the lung and the perinephric abscess, the liver was found to be riddled with small abscesses which could never have been drained.

In the second case the right perinephric space was explored by an orthodox approach. No pus was encountered, but on exploration of the liver through the bare area an abscess was found and drained. Subsequently two other abscesses lying more anteriorly in the liver caused pronounced hepatic enlargement and were drained across the peritoneal cavity, which was clean.

Two important points require comment. Firstly, it is obvious from the study of recorded cases and from my experience, that a posterior approach to the liver is frequently both necessary and preferable. It is sometimes difficult to distinguish between a posteriorly placed hepatic abscess and a deep perinephric abscess. Exploratory aspiration in such cases must be condemned. It is possible to explore the liver after the perirenal space has been exposed by the orthodox route. The removal of the twelfth rib and exploration through the lateral part of this area have been recommended. This is considered safe, on the assumption that the costo-phrenic angle does not go below the first lumbar spine. However, the abscess in the case recorded above was drained satisfactorily. Secondly, the transperitoneal exploration of anteriorly placed hepatic abscesses is open to criticism because of the obvious danger of infecting the peritoneal cavity. Clairmont has advised an extraperitoneal approach to the anterior surface of the liver by stripping the peritoneum off the under-surface of the diaphragm until the triangular ligament is reached. I have not done this.

The third case was somewhat similar to the second.

At first it appeared as if the abscess was placed posteriorly. However, gross hepatic enlargement with tenderness suggested that the anterior approach was the better. A small area of the liver was exposed and optimistically packed off from the peritoneal cavity with moist rolled gauze. A large-bore aspirating needle indicated the position and depth of the abscess. The needle was then withdrawn and the trochar and cannula for the introduction of a Malecot catheter were inserted. This catheter drains these abscesses well. The patient was fortunate in that penicillin was available. His temperature was normal by the fourth day, the catheter which had ceased draining was removed on the seventh day, and by the twelfth day the patient was out of bed.

Prognosis.

From the consideration of these cases success or failure obviously depends upon (i) whether or not other organs are involved, and (ii) whether multiple abscesses exist in the liver or not. Thus in suppurative pyelophlebitis, in which abscesses are usually small and multiple, the outlook is bad, although successful cases have been recorded by Treves, Howard and others.

Of the three patients whose cases are recorded here, the first had multiple abscesses in the liver and elsewhere and died, the second had two or three abscesses, and the third had a single abscess. Both the two last patients recovered rapidly after drainage of the abscess.

Summary.

Pyogenic abscess of the liver has been discussed, with special reference to abscesses resulting from systemic pyæmia. Three cases are recorded with one death.

Acknowledgement.

Reference must be made to the help given by those medical officers on the staff of the surgical division of the hospital who were responsible for the care and treatment of these patients. Thanks are due to Major-General S. R. Burston, Director-General of Medical Services, for permission to publish this paper.

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Reviews.

ANATOMY AND PHYSIOLOGY FOR PHYSIOTHERAPISTS.

"ANATOMY AND PHYSIOLOGY FOR STUDENTS OF PHYSIOTHERAPY, OCCUPATIONAL THERAPY AND GYMNASIICS", by C. F. V. Smout and R. J. S. McDowall, is well and clearly set out with sufficient detail for the student. It is profusely illustrated with clear plates and drawings. The chapters on living anatomy and muscles in action are particularly helpful to the physiotherapist.

It is a matter of regret that a standard terminology has not been established, some schools using the old and some the so-called "new". The fact that the new terminology is taught in Australia may not be disadvantageous to the student reading this book, in which the old terminology is exclusively used, as the necessity of reference may help to impress the subject matter more firmly on the memory.

VARICOSE VEINS, HÆMORRHOIDS AND OTHER CONDITIONS.

THE book by R. Rowden Foote on the injection treatment of varicose veins, hemorrhoids and other conditions is well illustrated and easily read.¹ The author discusses various tests for varicose veins and the treatment of veins and ulcers by the common injection methods. His remarks on allergic reactions to reinjection with sodium morrhuate or monoethanolamine oleate should be read by all who use these solutions. The treatment of ulcers by pressure and "Elastoplast" is described fully. The chapter on the operative technique is written by Rodney Mainiot. In this excellent description, he draws attention to the fact that this operation must be done at the junction between the main saphenous vein and the femoral and should include ligation of the tributary veins. The operation is often done incorrectly with unsatisfactory results. The author's remarks on the necessity of admitting these patients to hospital for at least forty-eight hours are important. The too frequent practice of performing this operation in the out-patient department should be condemned. Insufficient attention has been given to ligation of the external saphenous vein in the popliteal space and the description of the type of varices associated with this system.

The injection treatment of hemorrhoids is also dealt with. Nine cubic centimetres at each injection are considerably more than is usually given in Australia, whilst a solution of 20% phenol in glycerin, if used at all, should be used only by those expert and experienced in these methods.

The injection of hydrocele, bursæ, ganglion, nævus and anal fissure is also given in detail. For the injection of ganglion, collodion is recommended. The injection of hernia and varicocele is dismissed and not recommended. The use of quinine and urethane for the treatment of anal fissure, although not recommended, should not have been even referred to; it will cause much worry to those who try it.

The appendix contains a considerable amount of useful information, although in the description of the Saint Mark's Hospital lotion for *pruritus ani*, ounces are given instead of minims and "Mist. Mag. Hydrag." is written instead of "Mist. Mag. Hydrox."

This is an excellent book and one of considerable interest.

¹"Anatomy and Physiology for Students of Physiotherapy, Occupational Therapy and Gymnastics", by C. F. V. Smout, M.D., M.R.C.S., L.R.C.P., and R. J. S. McDowall, M.D., D.Sc.; 1944. London: Edward Arnold and Company. 9" x 6", pp. 425, with many illustrations. Price: 30s. net.

²"Varicose Veins, Hemorrhoids and other Conditions: Their Treatment by Injection", by R. Rowden Foote, M.R.C.S., L.R.C.P., D.R.C.O.G.; 1944. London: H. K. Lewis and Co. Ltd. 8½" x 5½", pp. 136, with many illustrations, some of which are in colour. Price: 12s. 6d.

The Medical Journal of Australia

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OF AXLES AND HINGES.

MANY different things have been said about wheels, from the sally of the long-suffering parishoner, who, in comparing sermons to wheels, remarked to the parish priest that "the longer the spoke, the greater the tire", to the observation of a Chinese philosopher that though thirty spokes united in one nave, it was upon the space left for the axle that the use of the wheel depended. The same kind of remark that the philosopher made may be applied to doors and hinges. Some months ago we heard a good deal about hinges in connexion with the invasion of Normandy and the fighting that took place around Caen. The strategy which cast the northern part of the fighting area as the site of the "hinge" was soundly conceived, and the opening of the "door" followed in due course. To make some hinges work may be extraordinarily difficult. Of axles and hinges a great deal might be written—of their forging and tempering; of their adjustment in regard to position, fit and loading; of the need for unremitting care of them in the matter of oiling and so on. And having done this, we might with the imagery of axles and hinges fashion parables that would suit our varying moods. From the medical and scientific point of view we might construct a parable that would serve, maybe as a corrective for ourselves, perhaps as propaganda for those unmindful of science, or even as a mental exercise. In our parable we should see the scientific investigation as it were in some kind of a vehicle fitted with wheels and travelling along a road, obstructed as so many roads in country not often frequented by the traveller are obstructed, by gates, some of which look as if they had never been opened. Our mental picture would thus have to do with the equipment of the scientist and with the difficulties and obstacles that he is likely to meet.

The equipment of a scientific worker is not only a question of the apparatus, the "tools of trade", with which he works. Much more important than these is his own mental equipment, his attitude to the problems of science. A man who perhaps has had a certain scientific training

and who has seen other scientific men at work, may be given a set piece of work by the chief of a scientific laboratory or organization. He will produce a result, but he will never be as valuable as the man who in addition to his training has the constantly inquiring mind. He should want to know "why", and be prepared to expend all his energies to find out. During last year there appeared in *The Lancet* a short editorial entitled "Insatiable Curiosity at the Lister". It is this quality which is so necessary in any man or woman who deals with scientific material. Of workers at the Lister Institute it was stated that neither preoccupation with the war nor war weariness itself could damp their ardour in the pursuit of preventive medicine. And here it may be remarked of those who practise clinical medicine, that the man who is able to keep himself informed of the progress in the special aspect of medicine in which he is interested and to treat the sick when they come to him, is the man who continually wants to know "why", who tries to learn how a disease originates and what it does to the human body. Scientific investigators are not found exclusively among those who work in laboratories. In regard to the equipment of the scientific investigator with apparatus, not a great deal need be stated. The skilled scientific worker is as a rule good at improvising substitutes for what he may lack. There are clearly many things that he cannot improvise, and in any case it is a waste of time to ask him to do so. Again, the term equipment includes laboratory accommodation. This must be adequate, but at the same time it is necessary to remember that too much money may be spent on bricks and mortar and the endowment of a research institute unnecessarily reduced. The mention of money is a reminder that investigators have to live and that their remuneration should be sufficient to free them from need to worry over the means of livelihood. The hours during which a scientific investigator engaged, for example, in medical research should work can seldom be defined. It is safe to state that as a general rule a research worker who has one eye on the clock, will never accomplish much that is worth while. Science is a jealous mistress, and truth, closely guarded by her, is described but rarely and by none who are not whole-hearted in her service. Those who are engaged in research are generally paid by salary and the regular hours with payment for overtime, envisaged by the advocates of a salaried medical service for the community, are not and never could be entertained for them. The workers at the Lister Institute who display such "insatiable curiosity" do not worry about payment for overtime.

Some of the difficulties of the scientific worker, some of the gates in his road, have been mentioned. Another that may be mentioned is the view sometimes expressed that research should always yield results. We hear that research workers should "justify their existence". Nothing could be more stupid. Results cannot be commanded. Research may be and often is conducted in accordance with a prearranged programme. Some idea may seem worth following or some indication may be given in the work of a previous investigator of a line of research likely to be fruitful; but to expect results on this account is stupid. It is nearly as bad to ask a worker to publish his half-baked findings. For this reason many persons have been afraid of bureaucratic control, and no doubt they often have justification for their fears. Control of this

kind is not necessarily bad, not necessarily unenlightened. For example, in Australia the National Health and Medical Research Council has fathered research of which no one could foretell an advantageous outcome. This is to be commended, provided the worker receiving a monetary grant is keen and gifted with imagination and resource. It is to be hoped that when this war has ended workers of originality will receive further encouragement. In one of his essays on research the late T. Brailsford Robertson, of Adelaide, writes that the infinite lies hidden in every grain of sand and that no object whatever is devoid of dignity as an object of research. To permit "abstract and generalized investigations" during the course of utilitarian research will in some circumstances be a sign of deep wisdom. In Australia at present some places at which research is conducted are bound for unavoidable reasons to carry out routine investigations connected with clinical work. In these circumstances forbearance and understanding are called for on the part of everybody concerned. The laboratory worker must try to give the service required of him, but the clinicians must recognize the necessity for limiting the routine work as far as possible and for the adoption of some workable arrangement that will allow the laboratory staff continuous periods free from interruption that they may pursue research projects. If this is not done the work of both clinician and laboratory worker will suffer in the long run. Professor James M. Mackintosh in a lecture published in *The Lancet* of July 1, 1944, uses the following words as one of the principles that he enunciates in connexion with the teaching and practice of preventive medicine:

No school or university can create a scientific outlook in its students unless it is actively engaged in research in the basic sciences. By this I mean science for the advancement of knowledge irrespective of "practical" considerations.

That these words are true will be granted by clinicians and laboratory workers alike. They state a truth which should be borne in mind when difficulties arise between clinicians and laboratory workers.

At the outset a parable of axles and hinges was mentioned. The parable as such has not been stated, but some of the ideas that it might suggest have been shortly discussed. The object of our striving should be to plan schemes that will work—wheels that will go round and hinges on which gates and doors may be opened. Success will depend in a certain measure on the gifts and enthusiasm of the worker and to some extent on the understanding and cooperation of those for whom and amongst whom he works. The final conclusion may be stated in words used by the President of the Rockefeller Foundation and quoted by Mackintosh at the end of his address:

We must be fearless in our devising, ready to cast out intolerance and partisan advocacy, unafraid of new plans for cooperative action, even when they run counter to traditions and techniques which have long been cherished.

Current Comment.

TRAUMATIC SUBDURAL EFFUSION IN CHILDREN.

PERHAPS few children grow up without a few severe falls, but the combination of a fall, even if not severe, and neurological signs is always worrying. When radiological examination after head injuries first became a routine procedure the surgical staffs of children's hospitals in

particular received some surprises. Since those days the centre of attention has rightly swung back to the condition of the nervous system whether or not bony damage can be demonstrated. Extradural and subdural lesions are not always easy of diagnosis, and therefore a small series of the latter type of injury in which operation was performed will be read with interest.

John P. Lanigan has recorded three cases in which children suffered a fall and subsequently showed symptoms of cerebral disturbance.¹ In no case was there any radiological evidence of damage to the skull. In one case the child was well for half an hour after the fall and then was noticed to have a paralysis of the right arm and leg. This disappeared after an hour, but a severe convulsion then caused alarm, especially as the mental state was disturbed and focal twitchings were noticed. At operation clear fluid escaped freely through the incised dura, and the brain was observed to pulsate freely thereafter. Immediate recovery followed. In the next case the child walked home after a fall, but speech disturbance then was noticed, followed by loss of consciousness and paresis of the right hand and arm and right side of the face. A trephine opening was made on each side, and clear fluid flowed freely from dural openings, more from the left side. Rapid recovery followed. The third case was very similar. The point at issue in these cases was the existence of a traumatic lesion within the skull. The signs undoubtedly indicated interference with the function of the temporal cortex, but was that due to an extradural or subdural lesion? Was such a lesion likely to be hæmorrhagic? It was noticed in each of these cases that some degree of improvement occurred before operation. Thus in one the initial convulsion was not repeated, and in the others the coma observed was only temporary. Focal signs, however, persisted. On the whole the clinical story differs from that of the much more serious extradural hæmorrhage in which early improvement is succeeded by signs indicative of a progressively expanding lesion. It might be argued that if the signs indicated an amelioration of the condition it might be safer and perhaps wiser to wait longer before operating. But as the author points out, once real alarm has been aroused, and once it is certain that a definite cortical lesion exists, it is dubious if it is wise to attempt to define just how long it is safe to wait for these focal signs to clear. The pathological basis for this form of cerebral trauma is, of course, both interesting and important. It is believed to be a tear in the arachnoid, allowing an extravasation of cerebro-spinal fluid. Such a tear was not actually seen by Lanigan in his cases, but great care was taken to avoid any operative trauma to the arachnoid membrane. Here we have cases in which alarming symptoms followed apparently trivial injuries. Fortunately the lesions found at operation were not severe, and not due to hæmorrhage. But who can say what may have been the sequels? Once again the surgical adage is emphasized that careful and repeated observations and examinations of the nervous system should be made whenever cerebral trauma is suspected.

PSYCHOSOMATIC FACTORS IN CUTANEOUS DISEASE.

THERE is perhaps today a certain danger that the psychosomatic influences on morbid bodily states are being unduly emphasized. Integration of the manifold ætiological factors of disease is perhaps the most difficult task of that type of medical practitioner sometimes called the internist. Perhaps the physician who is specially interested in the psyche tends to pay less attention to the soma unless he preserves a very careful balance. On the other hand, one might expect that the dermatologist would tend to be rather an "externist" from the very nature of his work, for as those not skilled in dermatology recognize with a certain touch of envy, he exemplifies the gift of rapid, detailed and accurate observation.

Brigadier R. M. B. MacKenna, Consulting Dermatologist to the British Army, points out that the importance of

¹ *The Lancet*, November 25, 1944.

nervous factors in skin disease is often overlooked.¹ Although, as he remarks, the whole subject of the psychosomatic factors is anathema to some, while others almost fail to remember the body itself, the literature bears testimony to the growing significance of this subject. Even text-books, he drily remarks, show growing awareness of its importance.

MacKenna attempts to subdivide the types of cutaneous lesion seen in the army, and incidentally in the general community, into groups which may be to some extent linked up with what he considers are corresponding groups of personality. Psychological testing of British service personnel has shown that only 10% fall into each of the highest and lowest selection grades, 20% into each of the second highest and second lowest grades, while 40% comprise the third grade. The "average man" therefore constitutes a great proportion of those dealt with. MacKenna points out the importance of supervising the lower groups. Lower intelligence carries with it certain dermatological hazards owing to the related lowering of fastidiousness and personal care. In typhus areas this might be a factor of definite general importance. But apart from intelligence *per se* there are important considerations related to personality. The dermatologist, according to this author, may with advantage recognize the following personality types: (a) those with hysterical features; (b) those with obsessional features; (c) those with severe anxiety, whether of overt or covert variety; and (d) those of narcissistic type. The hysterical type is obviously important to pick, for the self-produced lesion readily blossoms on his skin, even in spite of careful observation. The obsessional patient is usually very conscientious and orderly and has high intelligence. He is prone to compulsion neuroses, and the skin lesions likely to occur in his case are the pruriginous and the lichenified eruptions. All will surely agree with MacKenna that many medical men are of this type. He points out that the recognition of this mental factor is important in treatment, for the obsessional patient tends to push his devotion to ritual to such extent that his over-elaboration may even produce *dermatitis medicamentosa*. The over-anxious patient may deceive the doctor into thinking that his anxiety is chiefly about his cutaneous lesion, but a deeply embedded anxiety neurosis may really be basically important. Rosacea is an excellent example of the skin lesion common in this type, and other examples are hyperidrosis, pompholyx and excoriated acne. Observant medical officers in the services will readily confirm the common association of such lesions of the skin with this type of person. The narcissistic personality is, according to MacKenna, likely to be a background for dermatoses of the exudative type. He quotes Miller from a personal communication as stating that the narcissistic type of soldier is "debunked" when faced with the harder realities of military service. It seems quite possible that from the seeds of such a personality a lesion may flower on the skin, whose integrity is so important to the self-important nature.

The important practical point is brought forward by MacKenna in connexion with history taking. This is to apply the psychiatric technique in which a carefully dated clinical history is recorded, and some days later a personal life-history is taken with equally careful records of dates. In this way correlations may be discovered between life and ailment. As the author remarks truly, we cannot rely upon the patient's memory to supply this link, because of the phenomenon of active forgetting, so psychologically significant. The thought that has gone into this concept of cutaneous disease should stimulate thought not only in service circles but in the wider world of medical practice.

CANCER IN YOUNG PEOPLE.

CARCINOMA in the true sense of an epithelial malignant tumour is not common in the young, but more cases are now being reported, probably owing to greater interest,

keener understanding of pathology and more careful investigation. In such a reference to carcinoma the various neoplasia of the sarcoma pattern are not included, nor those believed to be of embryonic origin. Robert P. Morehead, in reporting a number of precocious epithelial malignant newgrowths, remarks that infancy and childhood are succeeded by a phase of life in which the danger of neoplasms is very small.¹ He quotes Ewing, who has pointed out that this decline in the malignancy risk during the presexual period is biologically important. During this period the possible tumour-forming causes of infancy are not significant, and are, so to speak, exhausted, while the aetiological factors peculiar to adolescence have not yet arrived. It has been noted that the sarcomata of bone are most common during one of the most significant stages in osteogenesis, a period extending to and embracing the age of puberty. But in the case of the carcinomata the incidence figures do not reach their peak till after the age of forty years. Morehead deprecates the tendency to regard carcinoma as one broad entity. He rightly stresses the great importance of recognizing each type and each location of carcinoma as having individual characteristics, which need special study and consideration in each case. Generalizations, he points out, are fraught with danger, as their attempt at establishing a common denominator may be frequently misleading.

The need for a comprehension of the pathology of any individual type of growth is well illustrated in Morehead's paper which concerns chiefly an account of carcinoma of the uterus in the young. Out of 104 specimens of carcinoma of the body of the uterus he found three in patients under the age of thirty years, an unusually high proportion. In two of these cases radical operation was completely successful; the third case was inoperable. Adenocarcinoma is a much more common variety of cancer than the squamous-celled type of growth in young women, but its prognosis is better. In general the experience of most writers is that the prognosis for these younger patients is much worse than it is for those over forty years. Of particular interest are the cases of squamous cancer of the cervix in young women. Morehead has collected seventeen cases from the literature, including two in which the pathological diagnosis was confirmed in his laboratory. All the patients were under the age of twenty years; one succumbed at the remarkably early age of twenty-two months. One of the author's cases was that of a trainee nurse who reported with menorrhagia. In discussing the problem, he points out that uterine cancer is probably a good example of the existence of a special local or general factor. It might well be that some defect in Nature's regulation of the ovarian hormones might at least be a factor in favouring a local imbalance of cellular activity. This is, of course, merely an assumption; but at least we have some concrete evidence in practice of the potency of the natural and synthetic hormones, and experience has shown that overstimulation by these important energizers may be not only a potential but an actual danger. It is, as Morehead points out, not without peculiar meaning that though cancer of the uterus is rare before the age of twenty, when it occurs it is more usually of the type which is less common in older women. Two cases of primary carcinoma of the liver in adolescents aged thirteen and eighteen are also presented in this article; probably these may be relegated to the same causal group as the hepatic cancer occasionally seen in early childhood.

In the discussion following the presentation of this paper Captain J. E. Berk remarked that in the army they had been impressed with an unexpected frequency of malignant tumours in the young. In two and a half years' hospital service he had seen four patients under the age of thirty-five with cancer of the stomach and five under the age of twenty with cancer of the colon. His colleagues had noted a similar frequency in malignant growths of other varieties. The moral of the communication is that in the investigation of suspicious signs or symptoms occurring in young persons due regard should be paid to the biological peculiarities of neoplasms in the regions under review.

¹ *The Lancet*, November 25, 1944.

¹ *Archives of Pathology*, September, 1944.

Abstracts from Medical Literature.

DERMATOLOGY.

Hazards of the External Use of Sulphonamide Compounds.

E. W. ABRAMOWITZ (*Archives of Dermatology and Syphilology*, November, 1944) states that there is a difference of opinion amongst various observers as to the frequency of cutaneous reaction to the local application of sulphonamide drugs. This discrepancy in observations of persons with wide experience is puzzling. The risks of unavoidable reactions from the internal use of the sulphonamide drugs for a serious illness are justifiably taken. The frequency of such reactions may be more or less an academic question. It becomes a matter of importance when such drugs are applied externally for comparatively minor disorders. The dermatitis from the local application of a sulphonamide drug appears first at the site of application and often simulates the cutaneous disease for which it is being used. An impetiginous eruption that is being treated presents an increased number of follicular-pustular lesions; *eczema cruris*, an increase in the number of papules and vesicles with diffuse redness; an ulcerative lesion, painful granulations. In some cases, the face becomes involved, presenting oedema and redness. This usually heralds an extension of the eruption to the trunk with the appearance of erythematous macules, some of the iris type, alone or mixed with papulovesicular and pustular lesions, especially in the intertriginous area. The eruption may become generalized even though the drug is discontinued. Frequent relapses are the rule. A redeeming feature about the reactions from external use of sulphonamide compounds has been the absence of any serious visceral complication like those appearing from the internal or parenteral use of the drug. This refers to hepatic or renal damage, leucopenia, acute hemolytic anaemia and others. This is because little absorption takes place with local application. However, the author quotes a case in which other organs did not escape after local application. The author gives details and histories of several patients who developed sensitivity to the sulphonamide compounds. In discussing prevention, he insists that wider dissemination of the knowledge of reactions and their consequences from the external use of sulphonamides is desirable. It is apparent from the histories mentioned and also from reports of others, that changing from external to internal use of the drug or *vice versa* or applying the drug over a prolonged period or intermittently is conducive to the development of sensitization. Other drugs with photosensitizing properties, like the barbiturates and gold, when in conjunction with sulphonamide drugs applied either externally or internally, may intensify the reaction of photosensitization. Innumerable preparations containing sulphonamide compounds are advocated for external use on minor lesions of the skin and mucous membranes. Such preparations generally shorten the duration of

impetigo, ecthyma, chancre and possibly other types of primary and secondary pyodermas. This advantage is offset by the following common complications: (i) development of a local or generalized dermatitis (allergic sensitization); (ii) appearance of photosensitization to sunlight and ultraviolet light; (iii) interference with the action of X rays; (iv) delay in wound healing; (v) local sanguineous healing oozing; (vi) interference with the action of local anaesthetics; (vii) resistance to sulphonamide therapy; (viii) rendering of the patient vulnerable to the subsequent use of the drug when most needed.

Dermatitis from Penicillin.

G. W. BINKLEY AND A. BROCKMOLE (*Archives of Dermatology and Syphilology*, November, 1944) report two cases of dermatitis from penicillin which occurred in the medical staff of hospitals. Considering the large number of patients receiving penicillin and of physicians, nurses and others exposed to the drug while administering it, the incidence of true contact dermatitis from penicillin reported is not large. In the first case reported by the authors the patient, Dr. A.B., who began the administration of penicillin about March 18, 1944, developed, in a few weeks, a dermatitis of the upper extremities and face. There were cyclic recurrences until August 7. During the period the patient regularly administered solutions of sodium penicillin to patients in hospital. Sodium penicillin was diluted with isotonic solution of sodium chloride so that one cubic centimetre contained 5,000 units. There was a strong positive reaction to a patch test of this in forty-eight hours. A few days later, a strong positive reaction was obtained within six hours to an intradermal injection of a solution of sodium penicillin of the same strength and to a second patch test.

Cause and Treatment of Furunculosis.

P. B. PRICE (*The Journal of the American Medical Association*, April, 1944) considers that a local spread of infection is sufficient to account not only for the features of furunculosis but also for its chronicity. In his opinion the usual manner of the spread of the infection in furunculosis is by discharges, sweat, bathing and friction, which smear the pathogenic organisms over the surfaces of the skin. The author recommends that an attempt should be made to sterilize the skin of the whole of the contaminated regions. Healthy skin can be thoroughly freed of staphylococci with exactly 70% ethyl alcohol. The affected areas are washed for from twenty to thirty minutes with the alcohol. The best time to employ this treatment is in the interval between the healing of the last furuncle and the onset of the next one. Eleven patients with furunculosis so treated had prompt and permanent relief.

Localized Epidermolysis Bullosa.

M. WAISMAN (*The Journal of the American Medical Association*, April 29, 1944) reports two cases of hereditary blistering dermatosis of the hands and feet. He also describes a typical case, an example of acquired localized epidermolysis bullosa, which does not possess hereditary and familial charac-

teristics. In epidermolysis bullosa an inherent vulnerability of the skin leads to the formation of bullae over parts subjected to mechanical trauma. The abnormality is localized to a great extent, the feet manifesting the lesions predominantly and almost exclusively in many cases. One of the cases reported is regarded as unique because of the strict limitation of the lesions to the fifth toe, onset in the third decade of life and absence of other familial cases. All three patients were soldiers, and the strenuous physical demands of military life may have been conducive to the activation of a latent blistering tendency. Diagnosis is aided by the family history, onset in childhood and relationship to excessive walking or manual work.

A Case of Light Sensitization.

D. ERSKINE (*The British Journal of Dermatology and Syphilis*, September-October, 1944) reports a case of light sensitization in an electric welder. The condition, which was probably caused by his work, cannot legally be considered as occupational dermatitis, which is defined as dermatitis caused by dusts and liquids. Barber and others differentiated the juvenile types of light sensitivity from the adult group, and showed that, whereas the former appear to be associated with abnormal haematoporphyrin metabolism, the sensitizing agent in the adult group seems to be of a different order, and reactive with light of longer wavelengths. The patient, an electric welder under treatment for "sero-negative primary syphilis", developed in the last few weeks of his treatment scattered pustular lesions on the sacrum and thighs, and a mild papular rash on the extensor aspect of the hands and forearms, which were exposed to the rays of the carbon arc at work. The eruption on the arms was controlled by quinine cream applied locally, but a month later a more severe sealy erythema of the face and forearms necessitated his admission to hospital. Light sensitization, possibly resulting from the rays of the carbon arc, was suspected at this stage. A test dose of mercury vapour light gave an excessive reaction: the blood picture was normal and no increased porphyrin excretion was found at any time. The patient left the ward after a month, but relapsed within a few hours of going into the open air, and developed generalized furunculosis with acute dermatitis on the exposed parts; this rapidly improved in hospital, but the pustular lesions resisted various treatments. The patient was again discharged from hospital, but he suffered a relapse three days later. After further relapses desensitization was attempted with fractional doses of mercury vapour light, as successfully used and reported by Hurst (1938). Treatment was given to a different area each day and the exposure was gradually increased so long as no severe local reactions occurred. After six months the maximum treatment enabled the patient to go out in the fresh air for only a quarter of an hour before sunset without reacting. No appreciable improvement was obtained with auto-hemotherapy, urinary protease injections, "Aolan", hydrochloric acid, vitamin C or massive doses of vitamin D. Test doses of mercury vapour light with various protecting substances and

filters suggested that the ultra-violet band was chiefly responsible for the sensitization and window glass gave complete protection. The author is now trying to desensitize the patient with increasing doses of daylight, but reactions occur after ten minutes out of doors in the afternoon. Investigation of the case suggests that the patient is sensitive to the ultra-violet band, and that the condition thereby differs from hitherto recognized light sensitization of adult type cases in which patients are sensitive to the rays of a wider band, including at least a proportion of longer wave-lengths. The adult type of sensitization is frequently associated with evidence of hepatic insufficiency and subjects are not protected by quinine or tannic acid, which further tends to differentiate this case from the more common type. Injections of concentrated vitamin A esters failed to benefit the author's patient, whereas this form of treatment has frequently been of value in the recognized adult type of light sensitization.

UROLOGY.

Prostatic Carcinoma Treated by Orchidectomy.

H. L. TOLSON (*The Urologic and Cutaneous Review*, March, 1944) reviews 28 cases of advanced prostatic carcinoma treated by subcapsular orchidectomy between October, 1941, and January, 1944. These advanced cases have been studied closely, and the survivors have been personally examined or have been communicated with by letter. Twelve of the twenty patients who had pain other than bladder pain had marked relief within five days of orchidectomy. Four were relieved within two months. Three continued to complain of pain in the back or thigh. Most patients reported an increase in weight and an improvement in general condition. Of the 28 patients, 19 are surviving at present; 17 of the 19 are comfortable and active, the other two are bed-ridden and going downhill. At this early stage in this new form of attack on carcinoma of the prostate questions rather than conclusions are in order. Some of the questions are: What percentage of patients respond favourably? What is the average duration of the palliative period? Should orchidectomy be postponed until needed to relieve pain or weight loss? What pathological types of carcinoma respond most favourably? At the present moment it may be stated that castration offers worthwhile palliation to a high percentage of patients suffering from advanced prostatic carcinoma. By performing subcapsular orchidectomy and inserting a "testure" of acrylic resin a normal appearance is maintained.

Two-Stage Nephrectomy.

G. V. CAUGHLAN AND T. D. BOLER (*The Journal of Urology*, May, 1944) state that there are occasions when the removal of a kidney constitutes a grave hazard for the patient and an exhausting ordeal for the surgeon. A deliberately planned two-stage nephrectomy is proposed to prevent shock and blood loss and because it may convert a most difficult one-stage nephrectomy into a comparatively easy two-stage operation. C. D. Losch is credited with

being the originator of the idea. The first case was that of a short stout man suffering from a moderate-sized hypernephroma. Excessive bleeding was encountered while the kidney was being dissected out and it was thought inadvisable to proceed. Three large packs were left in position round the freed kidney and the wound was closed with through-and-through sutures. After transfusion of blood and supportive measures nephrectomy was completed quickly and easily on the fourth day. The second case cited was that of a fourteen year old girl with a huge Wilms's tumour. A two-stage transperitoneal nephrectomy was decided upon, in spite of the risk of peritonitis, because of the easier access to the pedicle. On exposure through a left rectus incision the tumour was seen to extend from the diaphragm into the pelvis, displacing the abdominal viscera to the opposite side. The pedicle was ligated, the kidney was freed and packs were inserted. The wound was dressed without suturing. Dressings were changed frequently under rigid aseptic conditions on account of much sero-sanguineous discharge. On the second day the pedicle was ligated again, the ureter was divided and the kidney split transversely and removed. With drainage through the loin the wound was closed. The authors believe that both patients would have died had the operation been completed in one stage. They suggest that the method may be applicable to pyonephrosis and tuberculosis when difficult and bloody dissection consumes much time and contributes materially to shock.

Traumatic Anuria.

E. G. L. BYWATERS (*The Journal of the American Medical Association*, April 15, 1944) discusses ischemic muscle necrosis from crushing injury. This is common in all bombed areas, and its most serious manifestation, apart from shock or hemorrhage, is a special form of anuria. The general condition may at first not cause concern. Within a few hours, however, where crush lesions are extensive, the damaged limb swells and the blood volume is reduced by plasma leakage through damaged capillaries of the injured part. The patient becomes pale, cold and sweaty, with a thin pulse. Blood pressure is maintained for a time by arteriolar constriction, but, with further plasma loss, the systolic pressure falls to 80 or even 60 millimetres of mercury. Blood concentration will now be found at a maximum level of about 150% hemoglobin (19 to 22 grammes per 100 cubic centimetres). This state of affairs may be precipitated by warming the patient, or by anesthesia preliminary to operation. Where the patient has suffered from hemorrhage, the hemoconcentration will be masked by a parallel hemodilution. The first urine passed is usually highly acid, with a brown sediment of acid hematin granules. The supernatant urine may appear normal or smoky. In one to two days, the excretion of pigment ceases, and casts become more numerous, pigment casts at first, and later, more and more cellular. Oliguria increases and the secretion resembles glomerular filtrate, in that the urine content is low, while the chloride content is high. Thus there is evidence of severe tubular dysfunction. Nitrogen retention ensues and the patient

becomes drowsy. The blood pressure rises to 100 or even 200 millimetres of mercury, and is maintained until death or recovery diuresis ensues. In about one-third of the cases recovery occurs. In these cases, diuresis comes on about the sixth or seventh day. Renal recovery is slow, and takes several months for completion. Two-thirds of the patients die towards the end of the first week, and this seems to be associated with potassium poisoning, the potassium diffusing into the blood stream from the crushed muscle. These patients should not be given any meat or drugs containing potassium salts. The pathological changes found in the kidneys resembled those of renal failure following intravascular hemolysis, but they occurred in patients who had received no blood transfusions, as well as in those who had. The kidneys were swollen and tense, with foci of tubular necrosis and pigment casts. The pigment is myohemoglobin, an intracellular substance normally responsible for oxygen storage in skeletal muscle. There are cases in which no muscle crushing has occurred, but the main artery is severed, compressed or in spasm, with consequent ischemic necrosis of the muscle. This necrosis is hastened by the therapeutic warming, applied so often in the past to cold, pulseless limbs. As soon as the collateral circulation returns, the products of muscle autolysis are swept into the general circulation and renal failure develops. In treatment, the first and most urgent step is to guard against renal failure by establishing alkaline diuresis. The civil defence personnel should give sodium bicarbonate by mouth, and non-milky fluids such as tea or coffee before release from compression. Four grammes of sodium bicarbonate are given by mouth each hour till the urine is alkaline, then thirty grammes per day for two days. If vomiting occurs, the sodium bicarbonate, two teaspoonfuls to a pint of sterile water, is given intravenously. Shock, or a preshock stage of vasoconstriction with hemoconcentration, is treated by transfusions of serum or plasma. Morphine is given for pain; blankets are applied, but no heating. The injured limb is kept cool with ice bags to decrease the rate of autolysis. If circulatory obstruction occurs, the fascial compartment may be split along the course of the main artery or the vessel itself may be stripped if it is in spasm. Amputation is performed only if the limb is so severely damaged as to be useless, and then in the first twenty-four hours. Measures other than those chosen are of very doubtful value once renal failure has set in, and even these measures often fail.

Traumatic Hydronephrosis.

M. MELTZER (*The Journal of Urology*, May, 1944) states that search of the literature reveals only 18 authentic cases of true traumatic hydronephrosis. He describes such a case. In this instance a giant hydronephrosis developed; hence the importance of carrying out a urological examination when the patient gives a history of old standing injury to the abdomen or back. Months or years later the only subjective symptoms may be vague backache and some abdominal pain with a sense of fullness and weight in the abdomen, with or without urinary symptoms.

British Medical Association News.

SCIENTIFIC.

A MEETING of the New South Wales Branch of the British Medical Association was held on October 19, 1944, at Saint Vincent's Hospital, Sydney. The meeting took the form of a series of clinical demonstrations by members of the honorary medical staff of the hospital.

Melanoma Treated by X Rays after Operation.

DR. C. F. DE MONCHAUX AND DR. NELL FARRAR showed a male patient, aged forty-two years, who had been referred to the radiotherapy department on June 21, 1937, on account of a recurrent hard mass (enlarged lymph nodes) in the right inguinal region, about four centimetres by five centimetres in area. The patient had undergone excision of a melanotic sarcoma from the right leg three years before, and on June 4, 1937, a mass of lymph nodes had been excised from the right groin. Pathological examination of the tissue removed showed it to be an extensive secondary deposit of mixed cell type. Numerous giant cells and areas of necrosis were present, suggesting that the primary lesion was a melanoma, although no pigment was visible in the examined gland, as was to be expected after excision of a melanomatous lesion. There was rapid recurrence in the right groin. X-ray therapy was immediately given to this region (from June 24 to July 13, 1937). By August 17, 1937, much improvement in the right groin was obvious, and the nodal mass had regressed. The patient was given a second course of X-ray therapy from September 22 to October 20, 1937, on this occasion to the right inguinal and the right external iliac regions. His condition was good in December, 1937, when the nodes had regressed well and no abnormality was detected in the groin. Though the patient's condition was satisfactory in March, 1938, he was given a third course of X-ray therapy from April 5 to April 22, 1938. This was the last treatment given. Since then his condition had remained satisfactory, with no sign of recurrence in the groin or of extension of the neoplastic lesion. He had gained in weight, had carried on his usual work, and when last examined (September 25, 1944) his condition, both local and general, was satisfactory.

Melanoma of the Left Orbit.

Dr. de Monchaux and Dr. Farrar then showed a male patient, aged forty-nine years, who had been referred to the radiotherapy department on September 4, 1944; he was then an in-patient in the hospital, in the care of the honorary ophthalmologist. He had a history of injury to the left eye three years prior to his admission to hospital. Secondary glaucoma had apparently supervened, with total loss of sight. Evisceration was performed on May 26, 1944; pus was present in the anterior chamber. Oedema of the orbit and proptosis became pronounced, and the sclera was removed on August 15. Pus flowed freely for some time, but was subsiding on September 4. A pathological report on the growth removed from the left orbit on August 21 was to the effect that a large malignant melanoma was present, possibly arising in the chorioid. Much swelling of the residual orbital tissues was present. A course of X-ray therapy was given to the left orbital region from September 5 to September 13. When the patient was again examined on October 9, much less swelling and infection of the orbital tissues were present and considerable improvement had occurred. The patient's general condition was also better. It was stated that the patient would be given more X-ray therapy in due course.

Osteitis Deformans.

DR. B. G. HAYNES showed a male patient, aged sixty years, who had been examined in August, 1944, on account of a complaint of lumbosacral pain and of pain radiating down the left thigh to the front of the knee. The symptoms had been present for two or three years, and had steadily increased in severity. The lumbar pain was worse at night. The patient had been subject to rheumatic pains in various parts of his body for about twenty years, but never to the point of incapacity. Twenty years previously he had contracted a Neisserian infection.

Examination revealed about 40% limitation of movement at the left hip joint and about 20% at the right hip joint; the right clavicle was prominent, but there were no other relevant clinical findings. Radiological examination revealed

extensive hypertrophic arthritis of both hips with *osteitis deformans* of the upper end of the left femur. The lumbar region was not affected.

Dr. Haynes said that subsequent investigation had failed to reveal involvement of other bones, notably the skull, thoracic cage, spine and tibia. The question arose as to whether the arthritic changes were a separate pathological process. In the past four cases of *osteitis deformans* he had encountered, the pathological process was similar—involvement of the pelvic girdle with concomitant hypertrophic arthritis, the skull being unaffected. The pain had appeared to be caused by the arthritis rather than by the *osteitis deformans*; it had responded to measures which usually relieved pain in hypertrophic arthritis—rest, weight reduction and the exhibition of salicylates. The specific treatment for *osteitis deformans* had varied from case to case; aluminium acetate had been used in two cases, parathyroid extract and calcium had been used in the case under discussion, and no specific treatment had been used in the fourth. Clinically all four cases had followed the same course. In the standard text-books the skull was stated to be the bone most frequently involved, and no mention was made of associated hypertrophic arthritis. Dr. Haynes wondered whether the disease as seen in the eastern part of New South Wales differed in respect of skull involvement and associated hypertrophic arthritis.

Primary Tuberculous Complex.

Dr. Haynes then showed a female patient, aged three and a half years, who had first come under observation in January, 1944, as a contact of a tuberculous subject. The grandmother, with whom she lived and was in constant close contact, had recently been found to have an open lesion, and had died a few months later. The patient reacted to the patch test, but clinical examination revealed no abnormality in her chest and she appeared to be healthy. Her weight was thirty pounds. She had had several colds during the previous winter. X-ray examination revealed an extensive opaque area at the apex of the right lung, and a diagnosis of primary tuberculous complex was made. The patient was confined to bed for one week for observation. As she remained perfectly well and showed no evidence of toxæmia, she was allowed up and confined to the house for a further week; subsequently she was kept indoors during inclement weather only. She was given a protective diet, vitamin preparations and ultra-violet irradiation once a week during the winter. Serial X-ray examinations had revealed progressive resolution of the opacity, and the child had remained well and gained in weight. At the time of the meeting her weight was 33 pounds, and no abnormality was detected in the chest.

Dr. Haynes said that in time all that would remain in the patient's lung from the extensive tuberculous lesion was a Ghon's focus. Presumably this was the immunizing process through which many passed unsuspectingly at some period of their early life. The absence of toxæmia and other symptoms in the presence of such an extensive, acute tuberculous lesion challenged explanation. Perhaps the lesion was mainly lymphangitis of the area affected, with minimal involvement of the epithelial cells of the bronchioles and air cells. Inflammation of the last-mentioned elements, with their rich capillary blood supply, would give rise to much more toxæmia, as was seen in pneumonia and bronchopneumonia. Probably the pathology of primary atypical pneumonia was of similar type. Certainly the X-ray appearance of resolution occurring from the periphery, with concomitant increase in the size of the hilar lymph glands, was suggestive of lymphangitis. Moreover, the lymph channels in the child's lung were relatively more abundant than in that of the adult.

Progressive Bulbar Paralysis.

The next patient shown by Dr. Haynes was a female, aged sixty-eight years, who in November, 1942, had complained of excessive salivation, difficulty in speaking and increasing weakness and difficulty of walking since the extraction of several teeth ten days earlier. Her speech was slow and monotonous; the tongue could be protruded and pharyngeal movements were present, but incoordination and weakness of articulation and deglutition were noted. The abdominal reflexes were absent, the tendon reflexes of the lower limb were moderately exaggerated, the plantar reflex was extensor in type and slight spasticity was present. The Wassermann test failed to produce a reaction.

To control salivation various atropine preparations were pushed to the limits of tolerance. They were discontinued by the patient on account of discomfort, and because they

resulted in the flow of thick, tenacious saliva, which it was impossible to swallow and difficult to expectorate. In July, 1943, at the request of relatives, she was given without effect one cubic centimetre of "Prostigmin" parenterally. In December, 1943, she was persuaded to undergo a course of irradiation of the salivary glands. Salivation was appreciably diminished, but unfortunately a small area of ulceration occurred in the gum margin, and the patient refused a further course. She still complained of salivation; but her friends were emphatic that it was less than 25% of the pre-irradiation level. She used only a quarter of the number of handkerchiefs she previously used, and she was much brighter in herself.

Dr. Haynes said that her progress had been irregular. Her walking quickly recovered, but speech gradually deteriorated to complete dysarthria, whilst deglutition had been stationary for the past year—she could swallow fluids and semi-fluids with difficulty, but without nasal regurgitation. She was taking a balanced fluid diet, and her weight had dropped from ten stone in June, 1943, to eight stone ten pounds in July, 1944; however, she had gained two pounds in the past few months. Paralysis and atrophy of the tongue, the palate and the *orbicularis oris* had steadily increased. Dr. Haynes said that the relation between the extraction of teeth and the bulbar paralysis was suspicious. A similar paralysis occurred in diphtheria, presumably from spread of the toxin along the nerve route to the adjacent bulbar nerve centres. In hydrophobia the virus of rabies was known to follow similar nerve routes to the brain. There was considerable evidence that various viruses occurred in the mouth from time to time. Dr. Haynes thought that in the case under discussion it was probable

that a virus had gained access to the central nervous system from the open wounds in the gum following the extraction of teeth. With considerable trepidation a further extraction was carried out for intractable neuralgia in August, 1943, with only beneficial results. Dr. Haynes considered it unlikely that the virus of infantile paralysis was the cause. In infantile paralysis the paralysis was maximal in the initial stage, and some subsequent improvement occurred as the acute phase passed; such paralysis certainly did not progressively increase over a period of years.

(To be continued.)

MEDICO-POLITICAL.

A MEETING of the Victorian Branch of the British Medical Association was held at the Medical Society Hall, Albert Street, East Melbourne, on February 21, 1945, Dr. JOHN DALE, the President, in the chair.

Statement of Receipts and Expenditure.

Dr. C. H. Mollison, the Honorary Treasurer, presented the statement of receipts and expenditure of the Victorian Branch of the British Medical Association and of the Medical Society of Victoria for the year ended December 31, 1944. In presenting the statement Dr. Mollison spoke in the following terms.

I have pleasure in presenting the statement of receipts and expenditure of the British Medical Association and the Medical Society of Victoria for the year ended December 31, 1944.

BRITISH MEDICAL ASSOCIATION (VICTORIAN BRANCH) AND MEDICAL SOCIETY OF VICTORIA.

Combined Statement of Receipts and Expenditure for Year ended December 31, 1944.

RECEIPTS.		EXPENDITURE.	
	£ s. d.		£ s. d.
To Balance at December 31, 1943—		By British Medical Association, London	2,190 9 0
National Bank of Australasia Limited—		" THE MEDICAL JOURNAL OF AUSTRALIA	1,454 0 0
Medical Society of Victoria ..	1,159 13 5	" Victorian Medical Benevolent Association	246 10 6
State Savings Bank of Victoria ..	508 6 8	" Federal Council of the British Medical Association in Australia—	
Commonwealth Loans ..	500 0 0	Capitation Fees ..	1,033 10 0
Cash in Hand ..	12 0 0	Rebates to Subdivisions ..	34 0 0
	2,180 0 1	Medical Society of Victoria—	
Less National Bank of Australasia Limited Overdraft—		Organization Fund ..	927 13 6
British Medical Association ..	874 10 7	Library Books and Journals <i>et cetera</i>	283 4 6
" Subscriptions ..	1,305 9 6	Less Contribution from B.M.I. ..	146 11 2
" Medical Benevolent Fund ..	8,228 7 5		136 13 4
" British Medical Insurance Company—	246 10 6	" Salaries—	
Grant ..	480 0 0	Medical Secretary ..	1,200 0 0
Special Grant ..	250 0 0	Office and Library <i>et cetera</i>	1,214 2 3
Debentures ..	400 0 0		414 2 3
	1,130 0 0	" Pension—C. S. Crouch ..	300 0 0
" Rent of Hall ..	1 14 0	" Debenture Interest ..	200 5 0
" Sale of Journals ..	4 6 0	" Debenture Repayment of Principal	400 0 0
" Interest on Investments ..	26 8 2	" Audit Fees ..	15 15 0
" Medical Society of Victoria—		" Postages ..	246 17 10
Organization Fund Contribution ..	556 10 0	" Printing and Stationery ..	110 4 3
		" Sundry Expenses ..	133 18 10
		" Bank Charges and Exchange ..	4 7 2
		" Telephones ..	71 13 5
		" Lighting and Heating ..	58 6 1
		" Office Furniture and Equipment ..	7 7 6
		" Rates, Taxes and Insurance ..	44 5 9
		" Repairs ..	49 3 0
		" Travelling Expenses ..	3 2 2
		" Entertainment ..	34 15 8
		" Donations ..	2 2 0
		Balance at December 31, 1944—	
		National Bank of Australasia Limited—	
		Medical Society of Victoria ..	1,575 13 11
		State Savings Bank of Victoria ..	518 9 10
		Commonwealth Loans ..	500 0 0
		Cash in Hand ..	12 0 0
			2,606 3 9
		Less National Bank of Australasia Limited overdraft—	
		British Medical Association ..	1,226 0 5
			1,380 3 4
			£11,499 5 7
	£11,499 5 7		

(Signed) C. H. DICKSON, Secretary.

Compared with the Books and Accounts of the British Medical Association, Victorian Branch, and the Medical Society of Victoria and found to be in accordance therewith.

Melbourne,
January 31, 1945.

(Signed) CRAWFORD H. MOLLISON, Hon. Treasurer.

(Signed) J. V. M. WOOD & Co.,
Chartered Accountants (Aust.).

The credit balance at December 31 was £1,380 3s. 4d., an increase of £74 13s. 10d. compared with the previous year.

Despite the fact that the year ended with an increased credit, the financial position of the Branch caused the Council a good deal of concern, mainly because of the increase in the Federal Council capitation fee from 6s. to 13s. per member, and had it not been for the assistance received from the Organization Fund and the British Medical Insurance Company the credit balance would have been reduced to £573 13s. 4d.

The Organization Fund met the additional capitation fee amounting to £556 10s. and the British Medical Insurance Company made a special grant of £250 to the Branch towards meeting the loss incurred by reason of the reduction in the subscription of members in the forces.

The subscription revenue amounted to £8,228 7s. 5d., compared with £7,661 14s. 8d. for 1943, an increase of £566 12s. 9d., the number of subscriptions paid being 1,766 in 1944 and 1,609 in 1943.

The receipts for the year, excluding £400 received from the British Medical Insurance Company for debentures transferred to it from three deceased debenture holders, and which transfer does not reduce the liability of the Medical Society on its debenture account, were £1,394 in excess of those for 1943.

The details of the increase are shown hereunder:

	£
Subscriptions	566
Medical Benevolent Association	22
British Medical Insurance Company—special grant	250
Medical Society of Victoria Organization Fund (toward capitation fees)	556
	<hr/>
	£1,394

Members may rest assured that strict vigilance is being kept over all expenditure.

The association is again greatly indebted to the insurance company. In addition to providing £480 towards the Medical Secretary's salary, its action in voluntarily agreeing to a reduction in the interest rate of its debenture holding from 5% to 1% represents a substantial saving to the society. The company now holds debentures of the society to the extent of £3,350 (an increase of £400 during the year), on which interest at the rate of 1% is paid. This represents a saving of £134 *per annum* in interest charges. The company has also purchased books for the library to the value of £146 11s. 2d., and, as stated earlier in my report, has made a special grant of £250 to the Branch. I trust members will show their appreciation for the assistance given by the insurance company by placing as much of their insurance with it as they can possibly arrange. Members should bear in mind that this company is theirs and that its profits will accrue to their good. The company is an asset which members should take particular care to conserve and enhance.

The amount contributed to the Medical Benevolent Fund, £246 10s. 6d., is £21 14s. 9d. more than the previous year. I would particularly draw members' attention to this fund. It is one that should need no recommendation from me. Its sole purpose is to relieve distressed members. Unfortunately its activities have to be restricted to the degree to which members contribute to the fund.

I have pleasure in submitting for adoption the statement of receipts and expenditure.

The financial statement, which was adopted, is published herewith.

Post-Graduate Work.

COURSE IN DERMATOLOGY AT SYDNEY.

THE New South Wales Post-Graduate Committee in Medicine announces that a course in dermatology will be held in Sydney from Monday, April 9, to Friday, April 20, 1945, inclusive. The programme for the course, which will consist of out-patient demonstrations and lectures, is set out below.

The fee for the course is £3 3s., and applications to attend the course, accompanied by the amount of the fee, should be forwarded as soon as possible to the Secretary of the New South Wales Post-Graduate Committee in Medicine, 131, Macquarie Street, Sydney. Telephone: B 4606. The supervisor of the course is Dr. Adrian Johnson.

Monday, April 9: Saint Vincent's Hospital.

- 2 p.m. to 3.30 p.m.—Mycotic diseases, Dr. G. Lindeman.
3.30 p.m. to 4.30 p.m.—Out-patient demonstration, Dr. G. Lindeman.

Tuesday, April 10: Royal Prince Alfred Hospital.

- 2 p.m. to 3.30 p.m.—Organismal and virus infections, Dr. J. C. Belisario. Diseases of the hair and nails, Dr. J. C. Belisario.
3.30 p.m. to 4.30 p.m.—Out-patient demonstration, Dr. J. C. Belisario.

Wednesday, April 11: Sydney Hospital.

- 2 p.m. to 3.30 p.m.—Cutaneous neoplasms and pre-neoplasms, Sir Norman Paul.
3.30 p.m. to 4.30 p.m.—Out-patient demonstration, Sir Norman Paul.

Thursday, April 12: 113 Concord Military Hospital.

- 9.30 a.m. to 11 a.m.—Erythematous squamous eruptions and general principles of external treatment, Dr. A. L. Dawson.
11 a.m. to 12 noon.—Demonstration of patients, Major K. Myers.
2 p.m. to 3.30 p.m.—Vesiculo-bullous eruption and animal parasites, Major K. Myers.
3.30 p.m. to 4.30 p.m.—Demonstration of patients, Major K. Myers.

Friday, April 13: Royal Alexandra Hospital for Children.

- 2 p.m. to 3.30 p.m.—Common skin diseases of children, Dr. G. Norrie.
3.30 p.m. to 4.30 p.m.—Out-patient demonstration, Dr. G. Norrie.

Monday, April 16: Royal Prince Alfred Hospital.

- 2 p.m. to 3.30 p.m.—Papular dermatoses and skin manifestations of syphilis, Dr. C. F. Robinson.
3.30 p.m. to 4.30 p.m.—Out-patient demonstration, Dr. C. F. Robinson.

Tuesday, April 17: Royal Prince Alfred Hospital.

- 2 p.m. to 3.30 p.m.—Histopathology of the skin, Dr. J. S. Robertson.
3.30 p.m. to 4.30 p.m.—Demonstration of slides, Dr. J. S. Robertson.

Wednesday, April 18: Lewisham Hospital.

- 2 p.m. to 3.30 p.m.—Diseases of the sebaceous and sweat glands including *acne vulgaris*, Dr. J. W. Flynn.
3.30 to 4.30 p.m.—Out-patient demonstration, Dr. J. W. Flynn.

Thursday, April 19: Stawell Hall, 245, Macquarie Street.

- 10 a.m. to 12 noon.—Drug eruptions and the effect of endocrine disturbances as manifested in the skin, Dr. E. H. Molesworth.

Thursday, April 19: Royal North Shore Hospital.

- 2 p.m. to 3.30 p.m.—Dermatitis and eczema, Dr. F. C. Florance.
3.30 p.m. to 4.30 p.m.—Out-patient demonstration, Dr. F. C. Florance.

Friday, April 20: Royal Prince Alfred Hospital.

- 2 p.m. to 3.30 p.m.—The internal treatment and the effect of vitamins on skin diseases, Dr. F. Thompson.
3.30 p.m. to 4.30 p.m.—Out-patient demonstration, Dr. F. Thompson.

Correspondence.

THE COST OF PROPRIETARY DRUGS.

SIR: Most doctors know that there is a variation in the price of different brands of the same therapeutic substance, but few would expect the wide variations that do, in fact, occur. For example, one hundred tablets of aneurine (vitamin B₁), each containing one milligramme of the active substance, are sold at the following retail prices in Australia: 3s. 10d., 4s. 3d., 5s., 6s. 3d., 9s. 9d., 12s., 15s. 6d. and 18s. It is hardly necessary to add that the eight preparations are of equivalent therapeutic value, since one milligramme

of aneurine is a definite amount of a definite chemical substance, no matter which drug house shapes it into tablets.

It would seem that the careful doctor should add to his many burdens by checking the price of any proprietary medicine he is in the habit of using. It is not enough to restrict one's prescribing to the products of recognized drug houses, because the three firms charging 12s., 15s. and 18s. respectively for the tablets referred to above are very well known, whereas the two charging 3s. 10d. and 4s. 3d. are probably not widely known.

If there is anyone who still believes that free competition amongst traders always results in a reasonably fair and standard price, the data given above should interest him.

Yours, etc.,

COLIN WHITE.

43, Torrens Street,
Braddon,
Canberra, A.C.T.
February 20, 1945.

THE LIFTING OF HEAVY PATIENTS.

SIR: Could not some contrivance be devised by which nurses are relieved of the necessity of lifting a patient of fifteen stone or more, especially two nurses of light weight? In these days of mechanical marvels, is it unreasonable to imagine some kind of overhead gear that could be lowered to the bed by the pressing of a button and affixed to a sling? This problem can be serious in country hospitals when understaffed.

Yours, etc.,

R. N. BURTON.

Texas,
Queensland,
January 15, 1945.

THE MEETING OF THE OPHTHALMOLOGICAL SOCIETY OF AUSTRALIA (BRITISH MEDICAL ASSOCIATION): A CORRECTION.

SIR: I wish to draw your attention to an error which appeared in your report of the annual meeting of the Ophthalmological Society of Australia published in THE MEDICAL JOURNAL OF AUSTRALIA on February 3, 1945. On page 122, second column, last paragraph, the first and second sentences read: "Dr. Swan went on to state that at the onset of the exanthem the average duration of pregnancy of fourteen of the fifteen mothers whose children suffered from deaf-mutism was two to three months. The average duration of pregnancy under similar conditions of the seventeen mothers whose offspring had cataract was one to four months."

To make sense, "two to three months" should be "2-3 months", and "one to four months" should be "1-4 months".

Yours, etc.,

CHARLES SWAN.

Institute of Medical and Veterinary Science,
Adelaide,
February 9, 1945.

Naval, Military and Air Force.

APPOINTMENTS.

THE following appointments, changes *et cetera* have been promulgated in the *Commonwealth of Australia Gazette*, Number 37, of February 22, 1945.

CITIZEN NAVAL FORCES OF THE COMMONWEALTH.

Royal Australian Naval Reserve.

Appointment.—Francis Callum Archibald is appointed Surgeon Lieutenant, dated 22nd January, 1945.

ROYAL AUSTRALIAN AIR FORCE.

Citizen Air Force: Medical Branch.

Temporary Squadron Leader A. H. Penington (251211) is recalled from the Reserve to the Acting Force with effect from the 9th August, 1944.

The probationary appointments of the following Flight Lieutenants are confirmed with effect from 9th January, 1945: S. G. Barr (267515), C. R. Dines (277458), B. S. Skerman (277459), J. E. Carroll (267573), B. N. Ostberg (257582), W. T. Lesslie (267619), H. Seamonds (267692), J. M. Harris (267729), N. J. Michael (267728), L. H. S. Robbins (277463).

Reserve: Medical Branch.

Dr. Bernhard Monz (277532) is appointed to a commission on probation with the rank of Flight Lieutenant with effect from the 13th November, 1944.—(Ex. Min. No. 47—Approved 21st February, 1945.)

Obituary.

CLIVE LANSDELL PAINE.

A CORRESPONDENT who wishes to remain anonymous has written the following tribute to the late Dr. Clive Lansdell Paine:

Completely devoted to his work and his patients, he never spared himself, and no doubt hastened his death by overwork. His skill and experience, which were considerable, were always at my disposal, and freely given. The amount of first-class major surgery that he did was amazing, and the people of Atherton were very fortunate to have such a man in their district. His operative skill had to be seen to be believed. His only outside interest was freemasonry, which meant a lot to him. His wife, to whom he was devoted, predeceased him last year, and he leaves three sons, the eldest having just finished secondary school.

REGINALD POWER.

We regret to announce the death of Dr. Reginald Power, which occurred on March 2, 1945, at Lewisham, New South Wales.

WILLIAM COTTER WILLIAMSON.

We regret to announce the death of Dr. William Cotter Williamson, which occurred on March 2, 1945, at Leura, New South Wales.

Australian Medical Board Proceedings.

NEW SOUTH WALES.

THE following additional qualifications have been registered:

Johnson, Alexander Skeffington, 185, Macquarie Street, Sydney (M.B., B.S., 1933, M.S., 1939, Univ. Sydney), F.R.A.C.S., 1944.
Phillips, Gilbert Edward, 143, Macquarie Street, Sydney (M.B., B.S., 1929, Univ. Sydney), M.S., 1936, Univ. Sydney, F.R.A.C.S., 1938.
Kenny, Patrick John, 2/12 Australian General Hospital, Australia (M.B., B.S., 1936, Univ. Sydney, F.R.C.S., England, 1940), F.R.A.C.S., 1944.
Price, John William Lennox, R.A.A.F. (M.B., B.S., 1936, Univ. Sydney), D.O.M.S., England, 1940 (R.C.P. and S.), F.R.A.C.S. (Oph.), 1944.

Nominations and Elections.

THE undermentioned have applied for election as members of the New South Wales Branch of the British Medical Association:

Quill, Jack Sidney, M.B., B.S., 1944 (Univ. Sydney), 61, Railway Street, Carlton.
Bernard, Charles Frank, M.B., B.S., 1929 (Univ. Sydney), 73, Wyong Road, Cremorne.
Cunynghame, Donald Dryborough, M.B., B.S., 1942 (Univ. Sydney), 29, Harrow Road, Auburn.

The undermentioned have been elected members of the New South Wales Branch of the British Medical Association:

- Billings, Alison Margaret, M.B., B.S., 1944 (Univ. Sydney), Bathurst District Hospital, Bathurst.
 Cairns, Lance Joseph, M.B., B.S., 1939 (Univ. Sydney), NX34955, Major L. J. Cairns, Headquarters, 5 Australian Division, A.I.F., Australia.
 Cockburn, George Robert, M.B., B.S., 1942 (Univ. Sydney), NX166837, Captain G. R. Cockburn, Tennyson Point, Gladestville.
 Cook, Dudley Carlyle, M.B., B.S., 1944 (Univ. Sydney), Maitland Hospital, West Maitland.
 Cranswick, George Noel Harvard, M.B., B.S., 1942 (Univ. Sydney), Flight-Lieutenant G. N. H. Cranswick, Group 858, R.A.A.F., Pacific.
 Davies, Geoffrey Wyndham, M.B., 1939 (Univ. Sydney), Squadron Leader G. W. Davies, 55, Wright's Road, Drummoyne.
 Egan, Maxwell Christmas, M.B., B.S., 1944 (Univ. Sydney), 155, Greenwich Road, Greenwich.
 Grant, William Brodie, M.B., B.S., 1943 (Univ. Sydney), NX204411, Captain W. B. Grant, 105 Australian Light Field Ambulance, A.I.F., Australia.
 Henchman, David Crossborough, M.B., 1943 (Univ. Sydney), NX203558, Captain D. C. Henchman, 128 A.G.H., Australia.
 Kennedy, Marcus Matthew, M.B., B.S., 1933 (Univ. Sydney), F.R.C.S., 1939 (Univ. Edinburgh), 114, Ramsay Road, Haberfield.
 Laycock, John Field, M.B., B.S., 1944 (Univ. Sydney), "Tudor", 31, Cross Street, Concord.
 Livingston, Jean Flora, M.B., B.S., 1941 (Univ. Sydney), 10, Northcote Avenue, Killara.
 Passmore, Douglas James Buchanan, M.B., 1940 (Univ. Sydney), 786, Victoria Road, Ryde.
 Paul, Alister Bulkeley, M.B., B.S., 1942 (Univ. Sydney), 1 Australian Armoured Regiment, A.I.F., Australia.
 Roberts, Ronald Victor Wallace, M.B., B.S., 1941 (Univ. Sydney), NX122978, Captain R. V. W. Roberts, 4 Australian Field Regiment, A.I.F., Australia.
 Vines, Robert Harold, M.B., B.S., 1943 (Univ. Sydney), NX203565, Captain R. H. Vines, 154, Croydon Avenue, Croydon Park.
 Wilson, James Keith, M.B., B.S., 1943 (Univ. Sydney), Collarenebrl District Hospital, Collarenebrl.

The undermentioned have been elected as members of the South Australian Branch of the British Medical Association:

- Matthews, Maurice John, M.B., B.S., 1944 (Univ. Adelaide), 67, Hall Street, Semaphore.
 Hamilton, William Murray, M.B., B.S., 1944 (Univ. Adelaide), 4, Portrush Road, Marryatville.
 Coates, John Richard, M.B., B.S., 1944 (Univ. Adelaide), 2, Edith Street, Gawler.
 Parton, Arthur Leigh, M.B., B.S., 1944 (Univ. Adelaide), 15, Esplanade, Glenelg.
 Brockman, Benjamin Edward, M.B., B.S., 1944 (Univ. Adelaide), Royal Adelaide Hospital, Adelaide.
 Dinning, Trevor Alfred Ridley, M.B., B.S., 1942 (Univ. Adelaide), 40, Eaton Street, Malvern.
 Hunter, Ronald, M.B., B.S., 1944 (Univ. Adelaide), 26, The Crescent, Blair Athol.
 Flecker, Patrick Oscar, M.B., B.S., 1944 (Univ. Adelaide), 3, Dickens Street, St. Kilda, S.3, Victoria.
 Colton, Robert Stirling, M.B., B.S., 1944 (Univ. Adelaide), 79, Moseley Street, Glenelg.

Medical Appointments.

Dr. Ivor Gwynne Thomas has been appointed Government Medical Officer at Campbelltown, New South Wales.

Books Received.

"A Provisional Classification of Diseases and Injuries for Use in Compiling Morbidity Statistics", by the Committee on Hospital Morbidity Statistics: Medical Research Council of the Privy Council, Special Report Series Number 248: 1944. London: His Majesty's Stationery Office. 9½" x 6", pp. 168. Price: 3s. net.

"Psychology and Psychotherapy", by William Brown, D.M. (Oxon.), D.Sc. (London), F.R.C.P.; Fifth Edition: 1944. London: Edward Arnold and Company. 8½" x 5½", pp. 230. Price: 14s. net.

"Aids to Theatre Technique", by Marjorie Houghton, S.R.N., S.C.M., D.N., and Margaret Harding, S.R.C.N., S.R.N., S.C.M.; 1944. London: Baillière, Tindall and Cox. 6½" x 4½", pp. 278, with over 100 illustrations. Price: 4s.

Diary for the Month.

- MAR. 12.—Federal Council, B.M.A. in Australia: Meeting in Melbourne.
 MAR. 13.—New South Wales Branch, B.M.A.: Ethics Committee.
 MAR. 13.—New South Wales Branch, B.M.A.: Medical Politics Committee.
 MAR. 15.—South Australian Branch, B.M.A.: Council Meeting.
 MAR. 19.—Victorian Branch, B.M.A.: Hospital Subcommittee.
 MAR. 19.—Victorian Branch, B.M.A.: Finance, House and Library Subcommittee.
 MAR. 20.—Victorian Branch, B.M.A.: Organization Subcommittee.
 MAR. 20.—New South Wales Branch, B.M.A.: Council Quarterly Meeting.
 MAR. 21.—Western Australian Branch, B.M.A.: General Meeting.
 MAR. 22.—New South Wales Branch, B.M.A.: Annual Meeting.
 MAR. 23.—Queensland Branch, B.M.A.: Council Meeting.
 MAR. 27.—New South Wales Branch, B.M.A.: Council Meeting.
 MAR. 28.—Victorian Branch, B.M.A.: Council Meeting.

Medical Appointments: Important Notice.

MEDICAL PRACTITIONERS are requested not to apply for any appointment mentioned below without having first communicated with the Honorary Secretary of the Branch concerned, or with the Medical Secretary of the British Medical Association, Tavistock Square, London, W.C.1.

New South Wales Branch (Honorary Secretary, 135, Macquarie Street, Sydney): Australian Natives' Association; Ashfield and District United Friendly Societies' Dispensary; Balmmain United Friendly Societies' Dispensary; Leichhardt and Petersham United Friendly Societies' Dispensary; Manchester Unity Medical and Dispensing Institute, Oxford Street, Sydney; North Sydney Friendly Societies' Dispensary Limited; People's Prudential Assurance Company Limited; Phoenix Mutual Provident Society.

Victorian Branch (Honorary Secretary, Medical Society Hall, East Melbourne): Associated Medical Services Limited; all Institutes or Medical Dispensaries; Australian Prudential Association, Proprietary, Limited; Federated Mutual Medical Benefit Society; Mutual National Provident Club; National Provident Association; Hospital or other appointments outside Victoria.

Queensland Branch (Honorary Secretary, B.M.A. House, 225, Wickham Terrace, Brisbane, B.17): Brisbane Associated Friendly Societies' Medical Institute; Bundaberg Medical Institute. Members accepting LODGE appointments and those desiring to accept appointments to any COUNTRY HOSPITAL or position outside Australia are advised, in their own interests, to submit a copy of their Agreement to the Council before signing.

South Australian Branch (Honorary Secretary, 178, North Terrace, Adelaide): All Lodge appointments in South Australia; all Contract Practice appointments in South Australia.

Western Australian Branch (Honorary Secretary, 205, Saint George's Terrace, Perth): Wiluna Hospital; all Contract Practice appointments in Western Australia. All Public Health Department appointments.

Editorial Notices.

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